

A new genus and eight newly recorded genera of Braconinae Nees (Hymenoptera, Braconidae) from China, with descriptions of fourteen new species

Yang Li^{1,4}, Cornelis van Achterberg^{3,4}, Xue-xin Chen^{1,2,3,4}

1 State Key Lab of Rice Biology, Zhejiang University, Hangzhou 310058, China **2** Ministry of Agriculture Key Lab of Molecular Biology of Crop Pathogens and Insects, Zhejiang University, Hangzhou 310058, China **3** Zhejiang Provincial Key Laboratory of Biology of Crop Pathogens and Insects, Zhejiang University, Hangzhou 310058, China **4** Institute of Insect Sciences, College of Agriculture and Biotechnology, Zhejiang University, Hangzhou 310058, China

Corresponding author: Xue-xin Chen (xxchen@zju.edu.cn)

Academic editor: J. Fernandez-Triana | Received 9 June 2020 | Accepted 7 August 2020 | Published 19 May 2021

<http://zoobank.org/8FDAC6A3-30AB-4D33-9C00-9189A44FD8EE>

Citation: Li Y, van Achterberg C, Chen X-X (2021) A new genus and eight newly recorded genera of Braconinae Nees (Hymenoptera, Braconidae) from China, with descriptions of fourteen new species. ZooKeys 1038: 105–178. <https://doi.org/10.3897/zookeys.1038.55258>

Abstract

A new genus, *Parallobracon* **gen. nov.**, of the subfamily Braconinae (Hymenoptera, Braconidae) is described to include *Parallobracon prolatus* **sp. nov.** Eight genera *Chaoilta* Cameron, *Cyanopterus* Haliday, *Gammabracon* Quicke, *Ischnobracon* Baltazar, *Monilobracon* Quicke, *Pseudospinaria* Enderlein, *Vipiomorpha* Tobias, and *Zaglyptogastra* Ashmead (Hymenoptera: Braconidae: Braconinae) are newly recorded from China, their 21 species are revised, and 13 new species (*Chaoilta breviceps* **sp. nov.**, *Cyanopterus* (*Ipobracon*) *lucidus* **sp. nov.**, *Cyanopterus* (*Ipobracon*) *transversus* **sp. nov.**, *Gammabracon uniformis* **sp. nov.**, *Gammabracon wangi* **sp. nov.**, *Ischnobracon guttatus* **sp. nov.**, *Monilobracon longitudinalis* **sp. nov.**, *Monilobracon marginatus* **sp. nov.**, *Parallobracon prolatus* **sp. nov.**, *Vipiomorpha sulcata* **sp. nov.**, *Vipiomorpha yunnanensis* **sp. nov.**, *Zaglyptogastra exilis* **sp. nov.**, and *Zaglyptogastra tricolor* **sp. nov.**) are described and illustrated. *Bracomorpha* Papp, 1971, is included as subgenus in *Cyanopterus* Haliday, 1835 (**syn. nov.**) and *Cyanopterus ninghais* Wang, Chen, Wu et He, 2009, is a new combination. Keys to the Chinese species of the genera *Chaoilta*, *Cyanopterus*, *Gammabracon*, *Ischnobracon*, *Monilobracon*, *Vipiomorpha*, and *Zaglyptogastra* are provided.

Keywords

Bathyaulacini, Braconini, Euurobraconini, new combination, new record

Introduction

Bathyaulacini Quicke (Hymenoptera: Braconidae: Braconinae) is a small tribe which includes three genera (*Annectobracon* Chishti & Quicke, 1995, *Bathyaulax* Szépligeti, 1906 and *Ischnobracon* Baltazar, 1963). To date, only one genus (*Annectobracon* Chishti & Quicke, 1995) was reported from China (Chishti and Quicke 1995), but in this paper, we report one newly recorded genus: *Ischnobracon*, which is a small genus with eleven described species, mainly occurring in the Oriental region (Yu et al. 2016). The biology of this genus is still unknown.

Zaglyptogastra Ashmead, 1900, is a relatively large genus in the tribe Euurobraconini Ashmead (Hymenoptera: Braconidae: Braconinae) with 40 described species, mainly distributed in the Afrotropical region (Yu et al. 2016). Euurobraconini is a small tribe with three genera (*Euurobracon* Ashmead, 1900, *Pseudodicrogenium* Fahringer, 1936, and *Zaglyptogastra*), and so far, only one genus (*Euurobracon*) was reported from China (Yu et al. 2016). The biology is known of only one species: *Z. cristata* (Szépligeti) has been reared from *Tryphocharia princeps* (Blackburn) (Coleoptera: Cerambycidae) (Quicke 1983).

Chaoilta Cameron, 1899, and *Cyanopterus* Haliday, 1835, are two relatively large genera in the tribe Braconini Nees (Hymenoptera: Braconidae: Braconinae) with 42 and 139 described species worldwide, respectively (Yu et al. 2016). *Chaoilta* occurs mainly in the Oriental and Australasian regions, and *Cyanopterus* mainly in the Afrotropical, Palaearctic and Neotropical regions (Yu et al. 2016). Most species of *Cyanopterus* are ectoparasitoids of coleopteran larvae (including species of Cerambycidae and Curculionidae) (Yu et al. 2016); the biology of *Chaoilta* is still unknown. In this paper, two *Chaoilta* species are found in China, of which one species is new to science (*Chaoilta breviceps* sp. nov.), and five *Cyanopterus* species are found in China, of which three species are new to science (*Cyanopterus (Ipobracon) lucidus* sp. nov., *Cyanopterus (Ipobracon) prolatus* sp. nov. and *Cyanopterus (Ipobracon) transversus* sp. nov.). A new genus, *Parallobracon* gen. nov., in this tribe is found and described here with the type species, *Parallobracon prolatus* sp. nov. The biology of the new genus is unknown.

Pseudospinaria Enderlein, 1905, and *Vipiomorpha* Tobias, 1962 are two small genera in the tribe Braconini with only two and three described species, respectively (Yu et al. 2016). *Pseudospinaria* is endemic to the Oriental region, and *Vipiomorpha* is known from the Afrotropical and Palaearctic regions (Yu et al. 2016). *Vipiomorpha* Tobias is reported from the Oriental region for first time. The biology of both genera is still unknown.

Gammabracon Quicke, 1984, and *Monilobracon* Quicke, 1984, are two genera that are not assigned to any tribe within the Braconinae so far. Both are small genera, with five and six described species, respectively (Yu et al. 2016). *Gammabracon* is endemic to the Oriental region, and *Monilobracon* occurs in the Afrotropical, Australasian, Oriental and Palaearctic regions (Yu et al. 2016). The biology of both genera is still unknown. In addition to the description of new genera and species, keys to Chinese

species of seven genera (*Chaoilta*, *Cyanopterus*, *Gammabracon*, *Ischnobracon*, *Monilobracon*, *Vipiomorpha*, and *Zaglyptogastra*) are provided.

In this paper one new genus, *Parallobracon* gen. nov., including one new species, *Parallobracon prolatus* sp. nov. is described. Eight genera *Chaoilta* Cameron, *Cyanopterus* Haliday, *Gammabracon* Quicke, *Ischnobracon* Baltazar, *Monilobracon* Quicke, *Pseudospinaria* Enderlein, *Vipiomorpha* Tobias and *Zaglyptogastra* Ashmead are newly recorded from China, and 13 new species (*Chaoilta breviceps* sp. nov., *Cyanopterus* (*Ipobracon*) *lucidus* sp. nov., *Cyanopterus* (*Ipobracon*) *transversus* sp. nov., *Gammabracon uniformis* sp. nov., *Gammabracon wangi* sp. nov., *Ischnobracon guttatus* sp. nov., *Monilobracon longitudinalis* sp. nov., *Monilobracon marginatus* sp. nov., *Parallobracon prolatus* sp. nov., *Vipiomorpha sulcata* sp. nov., *Vipiomorpha yunnanensis* sp. nov., *Zaglyptogastra exilis* sp. nov. and *Zaglyptogastra tricolor* sp. nov.) are described.

Materials and methods

For the identification of the subfamily Braconinae, see van Achterberg (1990, 1993) and Chen and van Achterberg (2019), for the terminology and measurements used in this paper, see van Achterberg (1988, 1993), and for additional references, see Yu et al. (2016). The medial length of the third metasomal tergite is measured from the posterior border of the second suture to the posterior margin of the tergite (T).

Photographs were made with a Keyence VHX-2000 digital microscope and the photos were slightly processed (mainly cropped and the background modified) in Photoshop CS6. For the descriptions and measurements, a Leica M125 stereomicroscope was used.

The specimens are deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing (**IZCAS**), Shanghai Entomological Museum, Chinese Academy of Sciences, Shanghai (**SHEM**) and in Institute of Insect Sciences, Zhejiang University, Hangzhou (**ZJUH**).

Taxonomic accounts and keys

Genus *Chaoilta* Cameron, 1899

Figures 1–4

Chaoilta Cameron, 1899: 80; Szépligeti 1904: 17; Baltazar 1962: 749; Quicke 1981: 76, 1987: 106, 1991: 76. Type species: *Chaoilta lammellata* Cameron, 1899 (Monobasic).

Platybracon Szépligeti, 1900: 49. Type species: *Platybracon depressus* Szépligeti, 1900 (Monobasic). Synonymised by Roman 1913: 48.

Blastomorpha Szépligeti, 1900: 50. Type species: *Blastomorpha decorata* Szépligeti, 1900 (Designated by Viereck, 1914: 22). Synonymised by Cameron 1903: 121.
Iphioilta Ramakrishna Ayyar, 1928: 60. Type species: *Iphioilta malabarica* Ramakrishna Ayyar, 1928 (Original designation). Synonymised by Quicke 1987: 106.

Diagnosis. Body medium-sized to large; terminal antennomere slightly acute apically; median antennomeres often longer than wide, rarely slightly wider than long; pedicellus petiolate; scapus highly modified, lower inner apical rim of inner side of scapus interrupted because of a second small, more apical area; eye glabrous, weakly emarginated; face with a more or less strongly produced medially, transverse ledge, sometimes with a medial horn-like and distally concave projection above this; clypeus moderately narrow and without dorsal carina; malar suture moderately developed; labio-maxillary complex normal, not elongate; frons broadly impressed, with some setae and a median groove; mesosoma largely smooth and shiny, often more or less strongly dorsoventrally compressed; notauli largely absent; scutellar sulcus narrow and crenulate; propodeum flattened; angle between veins 1-SR and C+SC+R of fore wing more than 75°; vein r-m of forewing usually with two bullae; apex of hind wing vein C+SC+R with one thickened bristle; base of hind wing with glabrous area distal to vein cu-a; claws simple; fore tarsus at least 1.6× longer than fore femur (excluding trochantellus); fourth tarsal segment with numerous long bristles apico-ventrally, almost reaching apex of telotarsus; hind femur and tibia with relatively dense and long setae ventrally; lateral areas of T I wide and completely flattened; T II with deep oblique lateral grooves connected to wide sublateral grooves; antero-lateral grooves of T III short, and medial part of tergite 1.5× wider than its lateral parts; T III–V with distinct oblique antero-lateral grooves; ovipositor with dorsal nodus and ventral serrations subapically.

Biology. Unknown.

Distribution. Afrotropical; Australasian; Oriental.

Note. This genus is newly recorded from China.

Key to Chinese species of the genus *Chaoilta* Cameron

- 1 Metasomal tergites yellow (Fig. 4e); mesoscutum brownish yellow anteriorly and laterally (Fig. 4d); basal half of fore and hind wings membrane yellow and apical half dark brown (Fig. 4a, b), with a pale streak from base of pterostigma to vein 2-SR+M (Fig. 4a); apical 2/3 of pterostigma blackish brown (Fig. 4a); propodeum largely glabrous, with weak longitudinal striae medio-posteriorly (Fig. 4d); [China; India] *C. himalayensis*
- Metasomal tergites black (Fig. 2e); mesoscutum black anteriorly and laterally (Fig. 2d); fore and hind wings membrane slightly infusate (Fig. 2a, b), and with a darker area below parastigma (Fig. 2a); pterostigma entirely pale yellow (Fig. 2a); propodeum with setae and punctures laterally, and with strong longitudinal striae medially (Fig. 2d); [China] *C. breviceps* sp. nov.

***Chaoilta breviceps* sp. nov.**

<http://zoobank.org/3C5AD8DD-C704-42A7-BFE0-67DF18E7BE90>

Figures 1, 2

Material examined. *Holotype*: ♀, China, Yunnan Prov., Xishuangbanna Meng'a, 1000 m, 23.V.1958, Pu Fuji, No. IOZ(E)1964614 (IZCAS). *Paratype*. 1♀, China, Yunnan Prov., Xiaomengyang, 810 m, 30.III.1957, Zang Lingchao, No. IOZ(E)1964548 (IZCAS).

Diagnosis. This new species is very similar to *C. lammellata* Cameron, 1899 [India], but can be separated from the latter by the following characters: mesoscutum yellow, middle lobe anteriorly and lateral lobes laterally black (entirely yellow in *C. lammellata*); ovipositor sheath $0.86\text{--}0.88 \times$ as long as body ($1.35 \times$ in *C. lammellata*); scape entirely blackish brown (reddish brown basally and its apical half black in *C. lammellata*); propodeum with strong longitudinal striae medially, and with punctures laterally (smooth in *C. lammellata*); T V weakly sculptured (smooth in *C. lammellata*).



Figure 1. *Chaoilta breviceps* sp. nov., ♀, holotype, habitus, lateral view.

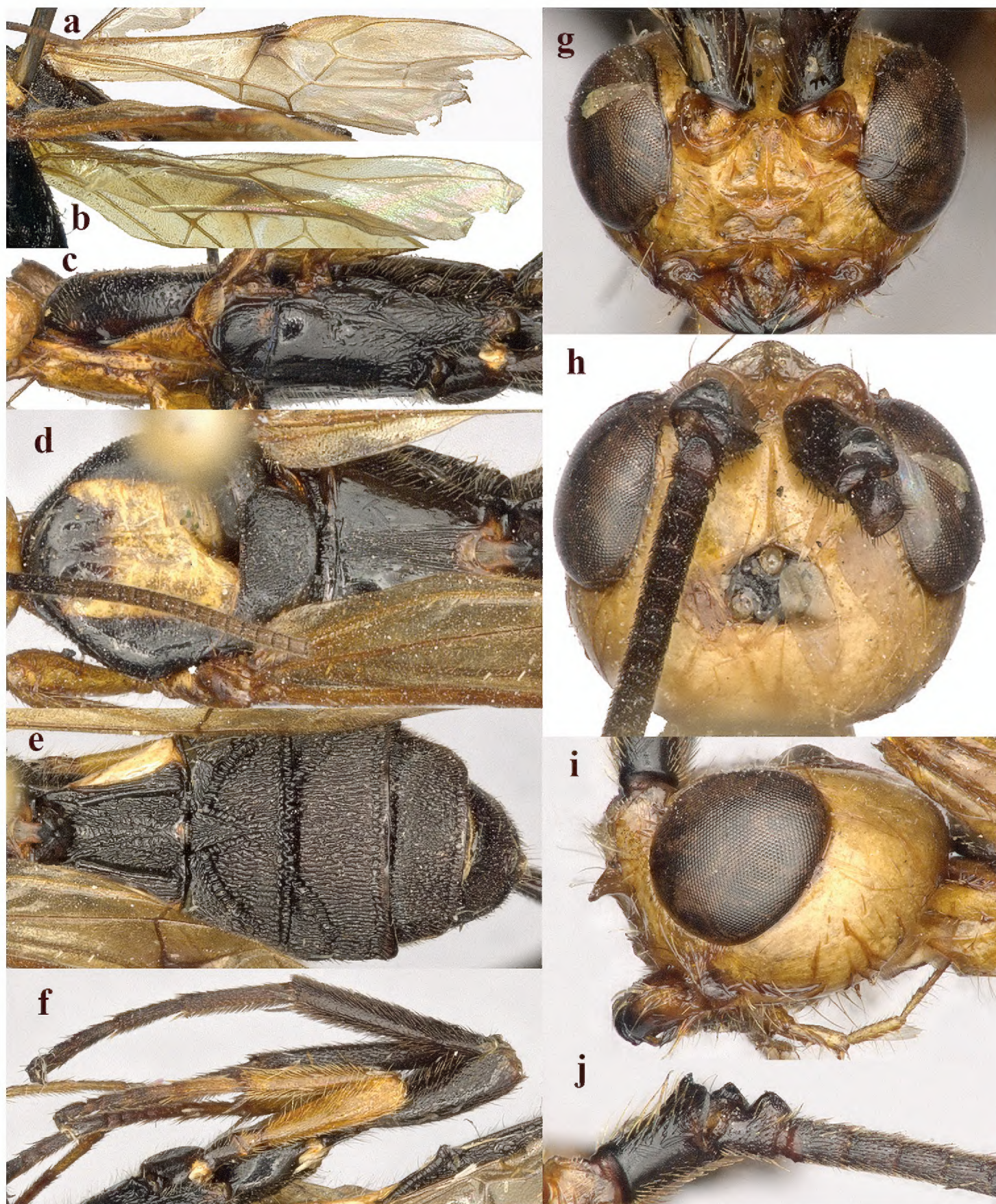


Figure 2. *Chaoilta breviceps* sp. nov., ♀, holotype. **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view.

Description. Holotype, ♀, length of body 11.1 mm, of fore wing 9.8 mm, of ovipositor sheath 9.6 mm.

Head. Antenna incomplete, with 26 antennomeres remaining; median antennomeres 1.1× wider than long; third antennomere 1.1 and 1.2× longer than fourth and fifth, respectively, the latter 1.3× longer than wide; length of maxillary palp 1.1× height of head; malar suture with short setae, and with fine sculpture (Fig. 2i); clypeus height:

inter-tentorial distance: tentorio-ocular distance = 3: 10: 8; clypeus with sparse long setae; eye weakly emarginated (Fig. 2g); face with a moderately developed transverse protrusion, dorsal side of protrusion with a medio-longitudinal carina which with a few branches (Fig. 2g, i); eye height: shortest distance between eyes: head width = 17: 21: 43; frons smooth, strongly and broadly depressed behind antennal sockets, with some short setae, sparsely and weakly punctate laterally, and with a strong median groove (Fig. 2h); vertex with some fine punctures, and largely glabrous except for a few short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 5: 6: 14; length of malar space $0.6\times$ basal width of mandible; in dorsal view length of eye $1.3\times$ temple (Fig. 2h).

Mesosoma. Length of mesosoma $3.4\times$ its height (Fig. 2c); pronotum emarginated medio-apically, and with dense setae postero-dorsally; notauli largely absent (Fig. 2d); middle lobe of mesoscutum weakly convex anteriorly, mesoscutum largely glabrous, but with long setae along imaginary notaulic courses (Fig. 2d); scutellar sulcus deep and narrow, crenulate (Fig. 2d); scutellum sculptured, more or less flattened; metanotum flattened medially (Fig. 2d); propodeum largely smooth, but with some longitudinal striae medially, and with a few weak punctures and long setae laterally (Fig. 2d).

Wings. Fore wing (Fig. 2a): SR1: 3-SR: r = 27: 17: 3; 1-SR+M bent after arising from 1-M, $1.7\times$ longer than 1-M; 2-SR: 3-SR: r-m = 9: 17: 6; cu-a interstitial. Hind wing (Fig. 2b): SC+R1 $1.5\times$ longer than 1r-m.

Legs. Length of fore femur: tibia: tarsus = 24: 27: 53; length of hind femur: tibia: basitarsus = 37: 60: 25; length of femur, tibia and basitarsus of hind leg 3.1, 7.5 and $5.2\times$ their maximum width, respectively (Fig. 2f).

Metasoma. Length of T I $1.3\times$ its apical width, median area convex and coarsely sculptured (Fig. 2e); lateral grooves of T I completely smooth (Fig. 2e); T II largely coarsely sculptured (Fig. 2e); apical width of T II $2.8\times$ its median length, triangular medio-basal area of T II medium-sized, attached to short medio-longitudinal carina, but absent near posterior margin of T II, grooves besides medio-basal area strongly crenulate; antero-lateral areas of T II coarse, anterior grooves wide and distinctly crenulate (Fig. 2e); second suture deep, crenulate, straight medially, and becoming narrower laterally (Fig. 2e); T III and T IV coarsely sculptured, with distinct antero-lateral areas; T III–V with crenulate transverse subposterior groove (Fig. 2e); sculpture and antero-lateral areas of T V relatively weak; T VI weakly sculptured; T VII largely smooth except a few weak punctures; hypopygium acute apically, far beyond level of apex of metasoma; ovipositor sheath $0.98\times$ as long as fore wing.

Colour. Largely black (Fig. 1); head largely pale yellow, except for antenna, eyes, stemmaticum and apex of mandible black (Fig. 2g); anteriorly and laterally mesoscutum black and remainder pale yellow; tegula, pronotum, propleuron, fore legs (except for black claws) and middle legs (except for coxae, trochanters, second-fifth segments of tibia and claws black, first segment of tibia infuscate apically) yellow (Fig. 2c, d, f); wing membrane infuscate, area below parastigma brownish, pterostigma and veins (except for forewing vein 1-SR+M half basally, 1-SR and 1-M dark brown) pale yellow (Fig. 2a, b).

Variation. Length of body of female 8.0–11.1 mm, of fore wing of female 7.3–9.8 mm, and of ovipositor sheath 7.0–9.6 mm; length of mesosoma $2.4\text{--}3.4\times$ its

height; fore wing vein cu-a slightly postfurcal; hind wing vein SC+R1 1.5–1.9× longer than vein 1r-m; ovipositor sheath 0.96–0.98 × as long as fore wing; area below parastigma sometimes paler, only greyish brown.

Biology. Unknown.

Distribution. China (Yunnan).

Etymology. Named after the short head, especially in anterior view: *brevis* is Latin for short and *-ceps* is Latin for head.

***Chaoilta himalayensis* (Cameron, 1899)**

Figures 3, 4

Bracon himalayensis Cameron, 1899: 70; Szépligeti 1904: 36; Ramakrishna Ayyar 1924: 354.

Chaoilta himalayensis (Cameron): Baltazar, 1972: 263; Shenefelt 1978: 1667; van Achterberg and O'Toole 1993: 7.



Figure 3. *Chaoilta himalayensis* (Cameron, 1899), ♀, habitus, lateral view.

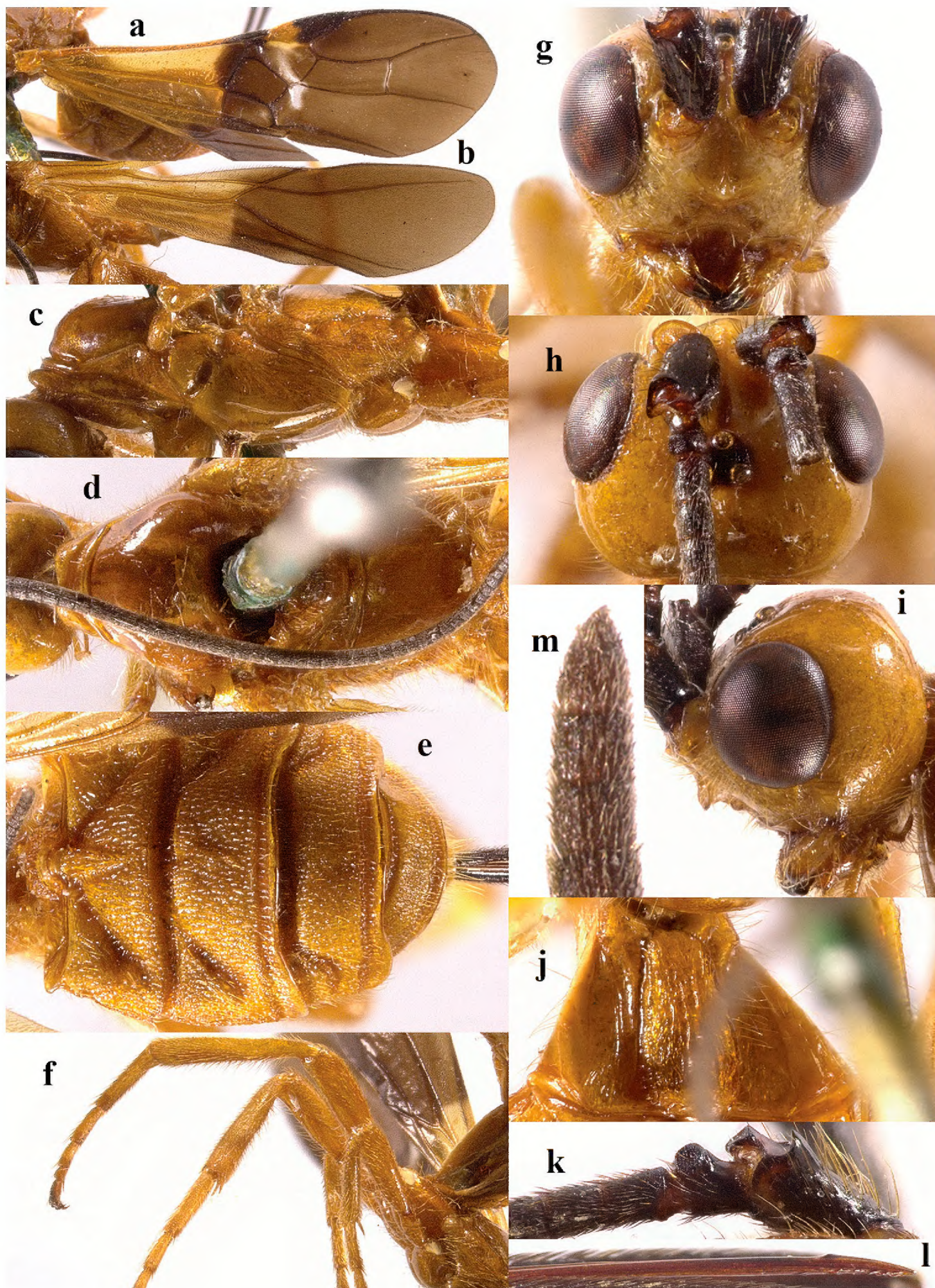


Figure 4. *Chaoilta himalayensis* (Cameron, 1899). ♀ **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** scapus outer side, lateral view **l** apex of ovipositor, lateral view **m** apex of antenna.

Material examined. 1♀, China, Hainan Prov., Qiongzong, 400 m, 16.VII.1960, Li Suofu, No. IOZ(E)1964594 (IZCAS); 1♀, China, Hainan Prov., Tongshi, 340 m, 31.VII.1960, Li Suofu, No. IOZ(E)1964592 (IZCAS); 1♀, China, Hainan Prov., Mt. Wuzhi, 27.IV.1984, Gu Maobin, No. IOZ(E)1964583 (IZCAS); 1♀, China, Hainan Prov., Baisha, 18.III.1959, Jin Gentao, No. 34023664 (SHEM); 1♀, China, Yunnan Prov., Cheli, 540 m, 12.III.1957, Wang Shuyong, No. IOZ(E)1964542 (IZCAS).

Biology. Unknown.

Distribution. China (Hainan, Yunnan); India.

Note. This species is newly recorded from China.

Genus *Cyanopterus* Haliday, 1835

Figures 5–12

Cyanopterus Haliday, 1835: 22; Szépligeti 1904: 21; Telenga 1936: 343; Watanabe 1937: 21; Tobias 1971: 210; Shenefelt 1978: 1676; Marsh 1979: 170; Quicke 1987: 109. Type species: *Ichneumon flavator* Fabricius, 1793 (Monobasic).

Ipobracon Thomson, 1892: 1787 (as subgroup of *Bracon* Fabricius, 1804); Shenefelt 1978: 1808; Quicke 1987: 109. Type species: *Bracon nigrator* Zetterstedt, 1838 (Original designation). Synonymised by Quicke 1985: 46.

Bracambus Thomson, 1892: 1787 (as subgroup of *Bracon* Fabricius, 1804); Shenefelt 1978: 1676; Quicke 1987: 109. Type species: *Vipio longipalpis* Thomson, 1892 (Monobasic and Original designation) (= *Ichneumon flavator* Fabricius, 1804). Synonymised by Szépligeti 1904: 21.

Bracomorpha Papp, 1971: 276; Quicke 1985: 358, 1987: 104. Type species: *Bracomorpha torkai* Papp, 1971 (Monobasic). Syn. nov.

Cyanopteridea Viereck, 1911: 476; Shenefelt 1978: 1677; Quicke 1987: 109. Type species: *Iphiaulax clypeolus* Szépligeti, 1905 (Original designation). Synonymised by Watanabe 1937: 21.

Coeloidimorpha Viereck, 1913: 558; Shenefelt 1978: 1677; Quicke 1987: 109. Type species: *Bracon (Melanobracon) webbi* Viereck, 1909 (Original designation) (= *Bracon laevis* Provancher, 1880). Synonymised by Muesebeck and Walkley 1951: 159.

Atanycolimorpha Viereck, 1913: 557; Shenefelt 1978: 1436; Quicke 1987: 109. Type species: *Atanycolimorpha winnemanae* Viereck, 1913 (Original designation) (= *Bracon provancheri* Dalla Torre, 1898). Synonymised by Quicke 1987: 109.

Notaulobracon Fahringer, 1929: 237; Shenefelt 1978: 1809. Type species: *Bracon nigrator* Zetterstedt, 1838 (Original designation). Synonymised by van Achterberg 1997: 30.

Diagnosis. Body medium-sized; terminal antennomere often strongly acute apically; in lateral view scapus without double margin at inner side apically and concave apico-laterally, ventrally longer than dorsally; eye glabrous, weakly emarginated; face smooth or superficially granulate, sometimes with a few sparse punctures; clypeus moderately narrow, often flattened and without dorsal carina; malar suture moderately developed,

often with long and dense setae; labio-maxillary complex normal, not elongate; frons weakly depressed, with some setae and a median groove; mesosoma largely smooth and shiny; notauli present only anteriorly; scutellar sulcus narrow and crenulate; propodeum largely smooth, without medio-longitudinal carina or groove; angle between veins 1-SR and C+SC+R of fore wing more than 75°; fore wing vein 1-SR+M straight or slightly curved subbasally; fore wing vein cu-a interstitial or slightly postfurcal; hind wing vein SC+R1 longer than vein 1r-m; basal lobes of claws largely rounded; metasoma often largely smooth and shiny; length of T I less than 1.5× its apical width; T II usually with a large medio-basal area, and with oblique lateral grooves connected to wide sublateral grooves; antero-lateral grooves of T III often wide and short; T III–V with or without antero-lateral areas; ovipositor with dorsal nodus and ventral serrations subapically.

Biology. Most species are larval ectoparasitoids of Coleoptera (especially Cerambycidae and Curculionidae, but also some species of Buprestidae and Bostrichidae), and of Lepidoptera (mainly Sesiidae, Pyralidae, Erebididae, and Tortricidae) (Webb 1909; Viereck 1912; Fahringer 1926, 1934; Ramakrishna Ayyar 1928; Myers 1932; Watanabe 1937; Györfi 1941; Grobler 1957; De Santis and Esquivel 1966; Fulmek 1968; Papp 1971; Tobias 1971, 1976, 1986; Uhthoff-Kaufmann 1990; Campadelli and Scaramozzino 1994; Cordo et al. 1995; Papp 2009; Wang et al. 2009; Yu et al. 2016).

Distribution. Cosmopolitan.

Note. Tobias and Belokobylskij (2000) divided this genus into three subgenera: *Cyanopterus* Haliday, 1835, *Ipobracon* Thomson, 1892, and *Paravipio* Papp, 1967; in this paper we include *Bracomorpha* Papp, 1971, as a subgenus; in China we have not yet found *Ipobracon* and *Cyanopterus* s. s.; and *Paravipio* is new to China. *Bracomorpha* may be easily confused with *Acampyloneurus* van Achterberg, 1992, but the latter has the lower ovipositor valve without teeth and the upper valve without nodus, T II with slightly converging sublateral depressions and the dorsal carina of the clypeus present. In addition, the type species has the first subdiscal cell of the fore wing distinctly (ca. 1.5×) higher than length of vein m-cu and scapus without apical ledge at inner side. In *Bracomorpha* the lower ovipositor valve has minute apical teeth and the upper valve has a minute nodus, the dorsal carina of the clypeus absent, T II with nearly parallel sublateral depressions or depressions largely absent, the first subdiscal cell is narrower than length of vein m-cu or subequal and scapus with more or less developed narrow apical ledge at inner side.

Key to subgenera and Chinese species of the genus *Cyanopterus* Haliday

- 1 Sublateral depressions of T II diverging posteriorly (Fig. 12e) (sometimes only anteriorly present and shallow); medio-basal area of T II narrow basally (Fig. 12e) (in *C. flavator* only basal part present); vein r of fore wing gradually merging into vein 3-SR (Fig. 12a)..... **2**
- Sublateral depressions of T II subparallel posteriorly (Figs 6e, 8e, 10e) (sometimes only present in anterior half of T); medio-basal area of T II wide basally (Figs 6e, 8e, 10e); vein r of fore wing more or less angled with vein 3-SR (Figs 6a, 8a, 10a)..... **3**

- 2 Medio-basal area of T II complete (Fig. 12e); T III with distinct and smooth antero-lateral grooves (Fig. 12e); subgenus *Paravipio* Papp, 1967; [marginal cell remains distinctly removed from wing apex (Fig. 12a); second metasomal suture smooth (Fig. 12e)] [China; Korea; Russia]..... ***C. (P.) jakuticus***
- Medio-basal area of T II only anteriorly developed; T III without distinct antero-lateral grooves; [not yet found in China] **subgenus *Cyanopterus* Haliday, 1835**
- 3 Antero-lateral grooves of T III absent; latero-basal triangular areas of T II not differentiated; [not yet found in China] **subgenus *Ipobracon* Thomson, 1892**
- Antero-lateral grooves of T III present (Figs 6e, 8e, 10e); latero-basal triangular areas of T II distinctly differentiated (Figs 6e, 8e, 10e); subgenus *Bracomorpha* Papp, 1971, stat. nov. **4**
- 4 Medio-basal area of T II rounded apically, shield-shaped (Fig. 10e); T III–V without subposterior transverse groove (Fig. 10e); mesoscutum dark brown anteriorly and postero-laterally (Fig. 10d) [China; Russia; Ukraine]..... ***C. (B.) tricolor***
- Medio-basal area of T II acute apically and triangular (Figs 6e, 8e); T III–V with distinct subposterior transverse grooves (Figs 6e, 8e); mesoscutum reddish yellow anteriorly and postero-laterally (Figs 6d, 8d) **5**
- 5 Scape distinctly protruding ventrally and slender (Fig. 6i); triangular medio-basal area of T II strongly tapering apically (Fig. 6e); vein 1-SR+M of fore wing bent basally (Fig. 6a) [China] ***C. (B.) lucidus* sp. nov.**
- Scape not distinctly protruding ventrally and robust (Fig. 8i); triangular medio-basal area of T II gradually tapering apically (Fig. 8e); vein 1-SR+M of fore wing straight basally (Fig. 8a) **6**
- 6 Head largely reddish yellow; median area of T I largely smooth except for coarsely sculptured posteriorly; subposterior transverse grooves of T III–V coarsely largely punctate especially laterally; fore leg largely dark yellow, but claws dark brown [China] ***C. (B.) ninghais***
- Head largely black (Fig. 8g, h); median area of T I largely coarsely sculptured except for smooth anteriorly (Fig. 8j); subposterior transverse grooves of T III–V largely smooth (Fig. 8e); fore leg entirely dark brown [China] ***C. (B.) transversus* sp. nov.**

***Cyanopterus (Bracomorpha) lucidus* sp. nov.**

<http://zoobank.org/575B3F79-DE6B-4363-AE30-D85326625C81>

Figures 5, 6

Material examined. Holotype: ♀, China, Zhejiang Prov., Lin'an, Mt. Tianmu, 11.VI.1993, Wang Jianping, No. 935484 (ZJUH). Paratypes. 1♀, same data as holotype, No. 935465 (ZJUH); 1♀, China, Zhejiang Prov., Lin'an, Mt. Tianmu, 11.VI.1993, Xu Zaifu, No. 935252 (ZJUH).



Figure 5. *Cyanopterus (Bracomorpha) lucidus* sp. nov., ♀, holotype, habitus, lateral view.

Diagnosis. This new species is very similar to *C. (I.) praecinctus* (Shestakov, 1936) [Korea; Russia], but can be separated from the latter by the following characters: in dorsal view length of eye $1.7\times$ temple, temples distinctly narrowed behind eyes (in dorsal view length of eye $1.5\times$ temple and temples weakly narrowed behind eyes in *C. (I.) praecinctus*); head with black dorsal marking small and narrowed to stemmaticum, not reaching frons (large and reaching frons); triangular medio-basal area of T II strongly tapering apically (gradually tapering apically).

Description. Holotype, ♀, length of body 5.1 mm, of fore wing 4.7 mm, of ovipositor sheath 1.6 mm.

Head. Antenna with 42 antennomeres; terminal antennomere slender and acute, $2.3\times$ longer than its maximum width (Fig. 6k); third antennomere $1.8\times$ longer than its maximum width, 1.1 and $1.2\times$ longer than fourth and fifth, respectively, the latter $1.4\times$ longer than wide; malar suture with sparse short setae, and with fine punctures (Fig. 6i); clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 10: 7; clypeus with sparse long setae; eye weakly emarginated (Fig. 6g); face largely glabrous except for a



Figure 6. *Cyanopterus (Bracomorpha) lucidus* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** apex of antenna **l** apex of ovipositor, lateral view.

few short setae, and with some sparse punctures (Fig. 6g); eye height: shortest distance between eyes: head width = 13: 13: 30; frons largely smooth, weakly concave behind antennal sockets, with a median groove (Fig. 6h); vertex smooth, but with some sparse short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 3: 4: 6; temples largely glabrous except for a few short setae, and directly narrowed behind eyes (Fig. 6h).

Mesosoma. Length of mesosoma 1.4× its height (Fig. 6c); notauli impressed in anterior half of mesoscutum (Fig. 6d); mesoscutum smooth, with sparse setae (Fig. 6d); scutellar sulcus rather wide, moderately deep, and with crenulae (Fig. 6d); scutellum with dense short setae posteriorly; metanotum strongly convex medially, and with a short median carina anteriorly (Fig. 6d); propodeum smooth, without longitudinal carinae or groove, with sparse setae medially, and dense long setae laterally (Fig. 6d).

Wings. Fore wing (Fig. 6a): SR1: 3-SR: r = 35: 23: 6; 1-SR+M weakly curved after arising from 1-M, and 1.5× longer than 1-M; 2-SR: 3-SR: r-m = 11: 23: 9; angle between 1-SR and C+SC+R ca. 85°; m-cu straight; 2-SR+M rather short; cu-a interstitial. Hind wing (Fig. 6b): SC+R1: 2-SC+R: 1r-m = 35: 7: 15.

Legs. Length of fore femur: tibia: tarsus = 22: 26: 37; length of hind femur: tibia: basitarsus = 30: 44: 16; length of femur, tibia and basitarsus of hind leg 3.4, 8.0 and 5.3× their maximum width, respectively (Fig. 6f); hind tibial spurs 0.3 and 0.4× as long as hind basitarsus.

Metasoma. Length of T I 1.1× its apical width, median area convex and sculptured (Fig. 6j); lateral grooves of T I sparsely crenulate (Fig. 6j); T II largely sculptured, but smooth posteriorly (Fig. 6e); triangular medio-basal area of T II large and smooth, with a few short oblique carinae connected laterally, and acute apically, but not attached with medio-longitudinal carina; antero-lateral areas of T II developed and smooth, anterior grooves moderately wide and crenulate (Fig. 6e); second suture deep and crenulate, wide and straight medially, narrow laterally (Fig. 6e); T III–V with antero-lateral areas, and crenulate transverse subposterior groove (Fig. 6e); T III–VII largely smooth, and with sparse long setae posteriorly; hypopygium acute apically, not reaching level of apex of metasoma; ovipositor sheath 0.3× as long as fore wing.

Colour. Head and mesosoma largely reddish yellow (Fig. 5); antenna (scapus and pedicellus paler), eyes, mandible apically, stemmaticum, metapleuron dorsally and propodeum (except medio-anteriorly) blackish brown (Fig. 6c, d, g, h); fore leg (except for telotarsus and claws dark brown) reddish yellow, middle and hind legs dark brown (Fig. 6f); metasoma and ovipositor sheath blackish brown (Figs 5, 6e); wing membrane infusate, pterostigma and veins dark brown (Fig. 6a, b).

Variation. Length of body of female 5.1–6.2 mm, of fore wing of female 4.7–5.7 mm, and of ovipositor sheath 1.5–1.7 mm; antenna of female with 42–50 antennomeres; crenulate transverse subposterior grooves of T III–V are sometimes absent medially; scutellum, metanotum, metapleuron and propodeum sometimes uniformly black.

Biology. Unknown.

Distribution. China (Zhejiang).

Etymology. Named after the shiny face: *lucidus* is Latin for shining.

***Cyanopterus (Bracomorpha) ninghais* Wang, Chen, Wu & He, 2009, comb. nov.**

Bracomorpha ninghais Wang, Chen, Wu & He in Wang et al. 2009: 944.

Biology. The type series have been reared from a larva of *Monochamus alternatus* Hope, 1842 (Coleoptera: Cerambycidae) (Wang et al. 2009).

Distribution. China (Zhejiang).

Note. Wang et al. (2009) first reported the species from Zhejiang (SE. China), but no specimens were available for our study.

***Cyanopterus (Bracomorpha) transversus* sp. nov.**

<http://zoobank.org/44660842-83FC-482F-A63F-C39DC3DEA589>

Figures 7, 8

Material examined. Holotype: ♀, China, Zhejiang Prov., Mt. Tianmu, 23.VI.1984, Zhu Xiliang, No. 842005 (ZJUH). Paratypes. 1♀, China, Zhejiang Prov., Anji, Mt. Longwang, 31.VIII.1983, Chen Xuexin, No. 939811 (ZJUH); 1♀, China, Zhejiang Prov., Mt. West Tianmu, 4.IX.1987, Chen Xuexin, No. 877070 (ZJUH); 1♀, China, Zhejiang Prov., Songyang, 18–31.VII.1989, He Junhua, No. 895329 (ZJUH); 1♀, China, Zhejiang Prov., Mt. West Tianmu, 3.IX.1987, Wang Xingeng, No. 876768 (ZJUH); 1♀, China, Henan Prov., Mt. Jigong, 11.VII.1997, Chen Xuexin, No. 973715 (ZJUH); 1♀, China, Fujian Prov., Mt. Meihua, 1000–1400m, 23–24.VII.1988, Fan Jinjiang, No. 886653 (ZJUH).

Diagnosis. This new species is very similar to *C. (I.) bohayicus* Belokobylskij, 2000 [Russia], but can be separated from the latter by the following characters: T I 1.0–1.1× longer than apical width (1.35 × in *C. (I.) bohayicus*); fore leg blackish brown (yellowish brown); triangular medio-basal area of T II gradually tapering apically (strongly tapering apically); ovipositor sheath 0.2–0.3× as long as fore wing (0.4×).

Description. Holotype, ♀, length of body 6.2 mm, of fore wing 6.5 mm, of ovipositor sheath 1.6 mm.

Head. Antenna with 55 antennomeres; apical antennomere acute, 2.4× longer than its maximum width; third antennomere 1.6× longer than its maximum width, 1.3 and 1.4× longer than fourth and fifth antennomers, respectively, the latter 1.1× longer than wide; malar suture with dense short setae (Fig. 8i); clypeus height: intertentorial distance: tentorio-ocular distance = 3: 8: 5; clypeus with sparse long setae; eye weakly emarginated (Fig. 8g); face granulate, with dense and long setae (Fig. 8g); eye height: shortest distance between eyes: head width = 14: 17: 32; frons largely smooth, weakly concave behind antennal sockets, with a strong median groove (Fig. 8h); vertex



Figure 7. *Cyanopterus (Bracomorpha) transversus* sp. nov., ♀, holotype, habitus, lateral view.

smooth, but with short setae especially laterally; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 1: 1: 2; temples largely smooth except for a few weak punctures, with sparse setae, and directly narrowed behind eyes (Fig. 8h).

Mesosoma. Length of mesosoma 1.5× its height (Fig. 8c); notauli impressed in anterior half of mesoscutum (Fig. 8d); mesoscutum smooth, with some sparse setae (Fig. 8d); scutellar sulcus rather wide, moderately deep, and with crenulae (Fig. 8d); scutellum with dense short setae posteriorly; metanotum strongly convex medially, and with a short

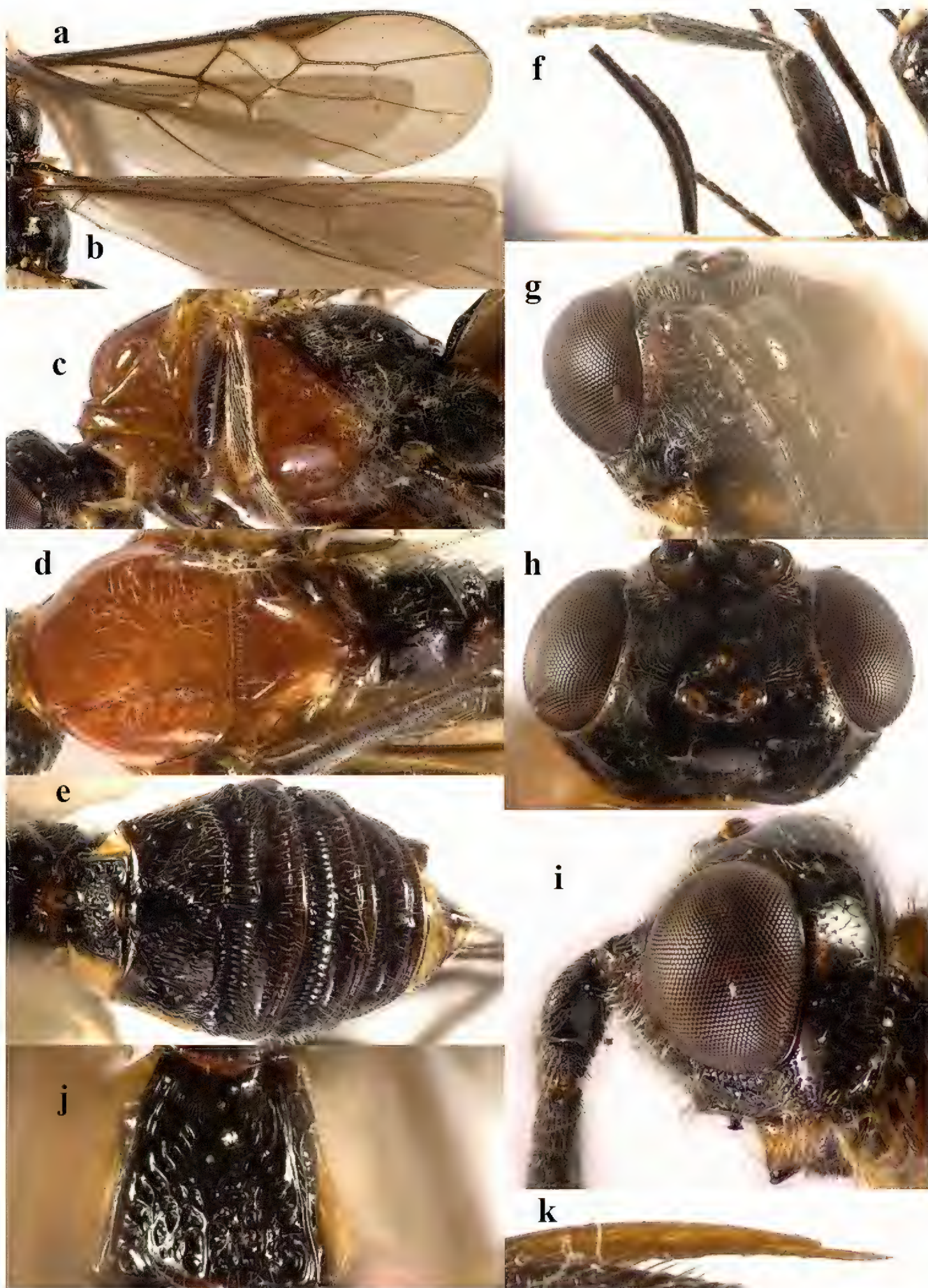


Figure 8. *Cyanopterus (Bracomorpha) transversus* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** apex of ovipositor, lateral view.

median carina anteriorly (Fig. 8d); propodeum smooth, without longitudinal carinae or groove, with sparse setae medially, and with dense long setae laterally (Fig. 8d).

Wings. Fore wing (Fig. 8a): SR1: 3-SR: r = 42: 31: 7; 1-SR+M more or less straight, and 1.6× longer than 1-M; 2-SR: 3-SR: r-m = 13: 31: 11; angle between 1-SR and C+SC+R ca. 80°; m-cu straight; 2-SR+M rather short; cu-a slightly postfurcal. Hind wing (Fig. 8b): SC+R1: 2-SC+R: 1r-m = 31: 8: 17.

Legs. Length of fore femur: tibia: tarsus = 25: 27: 41; length of hind femur: tibia: basitarsus = 33: 46: 18; length of femur, tibia and basitarsus of hind leg 3.7, 7.7 and 4.5× their maximum width, respectively (Fig. 8f); hind tibial spurs 0.35 and 0.40 × as long as hind basitarsus.

Metasoma. Length of T I equal to its apical width, median area convex and coarsely sculptured (Fig. 8j); lateral grooves of T I strongly crenulate (Fig. 8j); T II largely sculptured except posteriorly (Fig. 8e); triangular medio-basal area of T II large and smooth, with some short oblique carinae laterally, and acute apically, but without medio-longitudinal carina; antero-lateral areas of T II developed and smooth, anterior grooves moderately wide and sparsely crenulate (Fig. 8e); second suture deep and crenulate, wide and straight medially, narrow laterally (Fig. 8e); T III–V with antero-lateral areas, and crenulate transverse subposterior groove (Fig. 8e); T III–VII largely smooth, and with sparse short setae; hypopygium acute apically, not reaching level of apex of metasoma; ovipositor sheath 0.2× as long as fore wing.

Colour. Head largely black, mandible (except for apically) and maxillary palps basally yellowish brown, surrounding area of eyes reddish yellow (Fig. 8g, h); mesosoma largely reddish yellow (Fig. 8c), metanotum, metapleuron and propodeum black (Fig. 8c, d); legs, metasoma and ovipositor sheath black (Figs 7, 8e, f); wing membrane greyish brown, pterostigma and veins dark brown (Fig. 8a, b).

Variation. Length of body of female 5.6–6.5 mm, of fore wing of female 6.0–6.9 mm, and of ovipositor sheath 1.4–2.3 mm; ovipositor sheath 0.5–0.6× as long as fore wing; length of mesosoma 1.4–1.7× its height; length of T I 1.0–1.1× its apical width; ovipositor sheath 0.2–0.3× as long as fore wing; fore femur and tibia sometimes somewhat reddish yellow.

Biology. Unknown.

Distribution. China (Henan, Fujian, Zhejiang).

Etymology. Named after the transverse head, especially so in dorsal view: *transversus* is Latin for transverse.

Cyanopterus (Bracomorpha) tricolor (Ivanov, 1896)

Figures 9, 10

Iphiaulax tricolor Ivanov, 1896: 177; Szépligeti 1904: 22.

Iphiaulacidea tricolor (Ivanov): Fahringer, 1926: 212.

Ipobracon tricolor (Ivanov): Telenga, 1936: 96; Tobias 1971: 207; Shenefelt 1978: 1936.



Figure 9. *Cyanopterus (Bracomorpha) tricolor* (Ivanov, 1896), ♀, habitus, lateral view.

Cyanopterus (Ipobracon) tricolor (Ivanov): Tobias & Belokobylskij, 2000: 176.

Material examined. 9♀♀, 17♂♂, China, Heilongjiang Prov., Yichun, ??.1985, Jin Liyuan, No. 864299 (five specimens), 864298 (three specimens), 864300 (five specimens), 864301 (six specimens), 864732 (two specimens), 864735, 864736 (three specimens), 864738 (ZJUH); 2♀♀, 1♂, China, Helongjiang Prov., Daicen, 24.VII.1977, He Junhua, No. 771723, 771674, 771671 (ZJUH); 1♀, 2♂♂, China, Jilin Prov., Mt. Changbai, 10.VIII.1977, He Junhua, No. 771350, 771486, 771480 (ZJUH).

Biology. Unknown.

Distribution. China (Heilongjiang, Jilin); Russia; Ukraine.

Note. This species is newly recorded from China.

Cyanopterus (Paravipio) jakuticus (Tobias, 1973)

Figures 11, 12

Ipobracon jakuticus Tobias in Tobias and Abdinbekova 1973: 435; Shenefelt 1978: 1821.

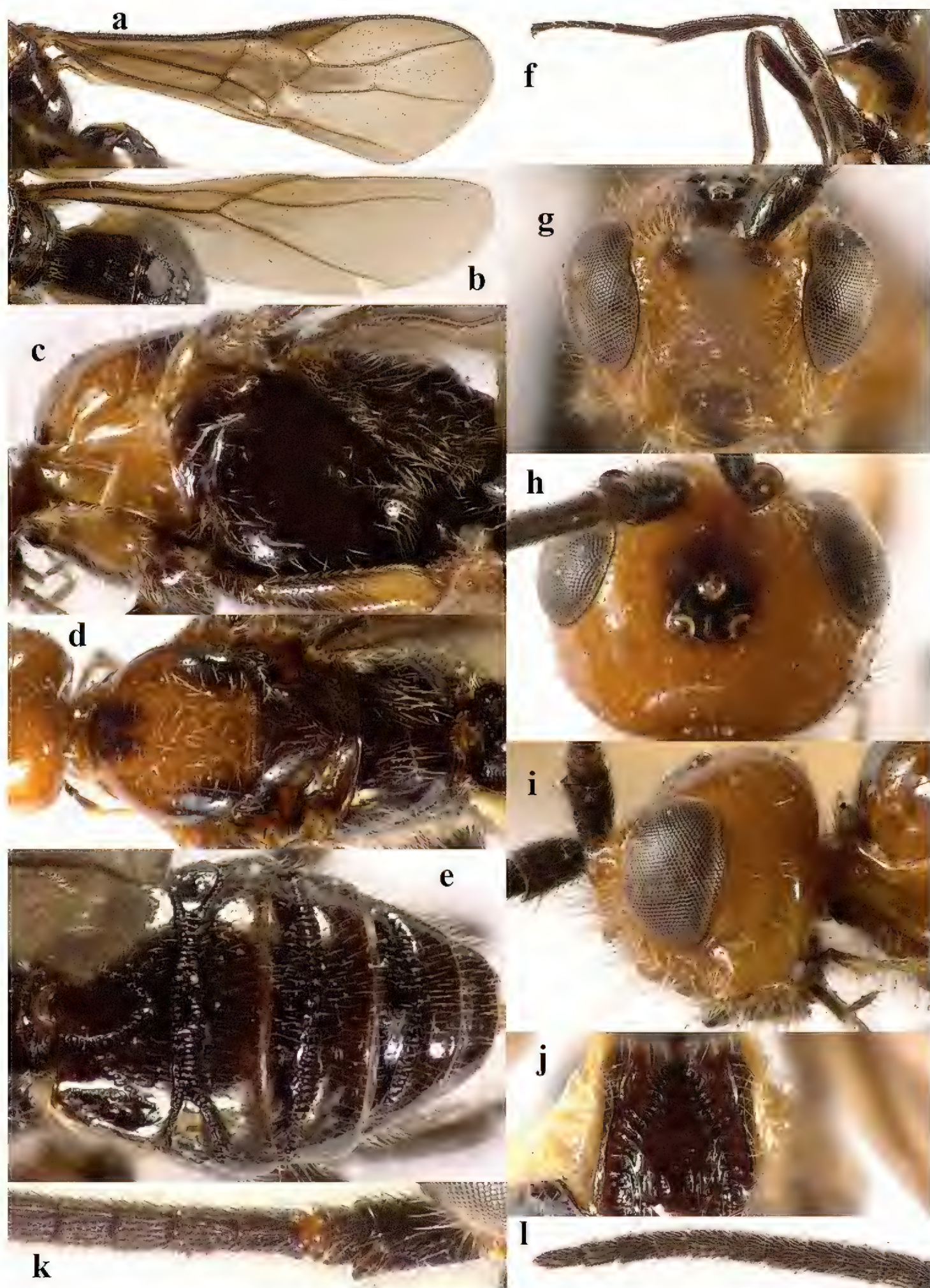


Figure 10. *Cyanopterus (Bracomorpha) tricolor* (Ivanov, 1896). ♀ **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** scapus outer side, lateral view **l** apex of antenna.



Figure 11. *Cyanopterus (Paravipio) jakuticus* (Tobias, 1973), ♀, habitus, lateral view.

Cyanopterus (Ipobracon) jakuticus (Tobias): Papp, 1996: 155.

Cyanopterus (Paravipio) jakuticus (Tobias): Tobias & Belokobylskij, 2000: 171.

Material examined. 1♀, China, Jilin Prov., Mt. Changbai, 10.VIII.1977, He Junhua, No. 771330 (ZJUH); 1♂, China, Heilongjiang Prov., Daicun, 24.VII.1977, He Junhua, No. 771793 (ZJUH).

Biology. Unknown.

Distribution. China (Heilongjiang, Jilin); Korea; Russia.

Note. This species is newly recorded from China.

Genus *Gammabracon* Quicke, 1984

Figures 13–16

Gammabracon Quicke, 1984a: 73, 1987: 113. Type species: *Gammabracon scrobi* Quicke, 1984 (Monobasic and original designation).

Diagnosis. Body large; terminal antennomere often strongly acute apically; median antennomeres usually weakly wider than long; in lateral view scapus without double margin or with narrow ledge at inner side apically and slightly concave apico-laterally, ventrally longer than dorsally; eye glabrous, not or weakly emarginate; face strongly sculptured, depressed below and between the antennal sockets; clypeus moderately narrow, rugose and often without dorsal carina; malar suture moderately developed, often rugose; labio-maxillary complex normal, not elongate; frons strongly depressed, with a weak median groove; middle lobe of mesoscutum protruding strongly in front of lateral lobes; notauli developed and complete; scutellar sulcus narrow and crenulate; scutellum sometimes with an emargination medio-anteriorly; metanotum convex

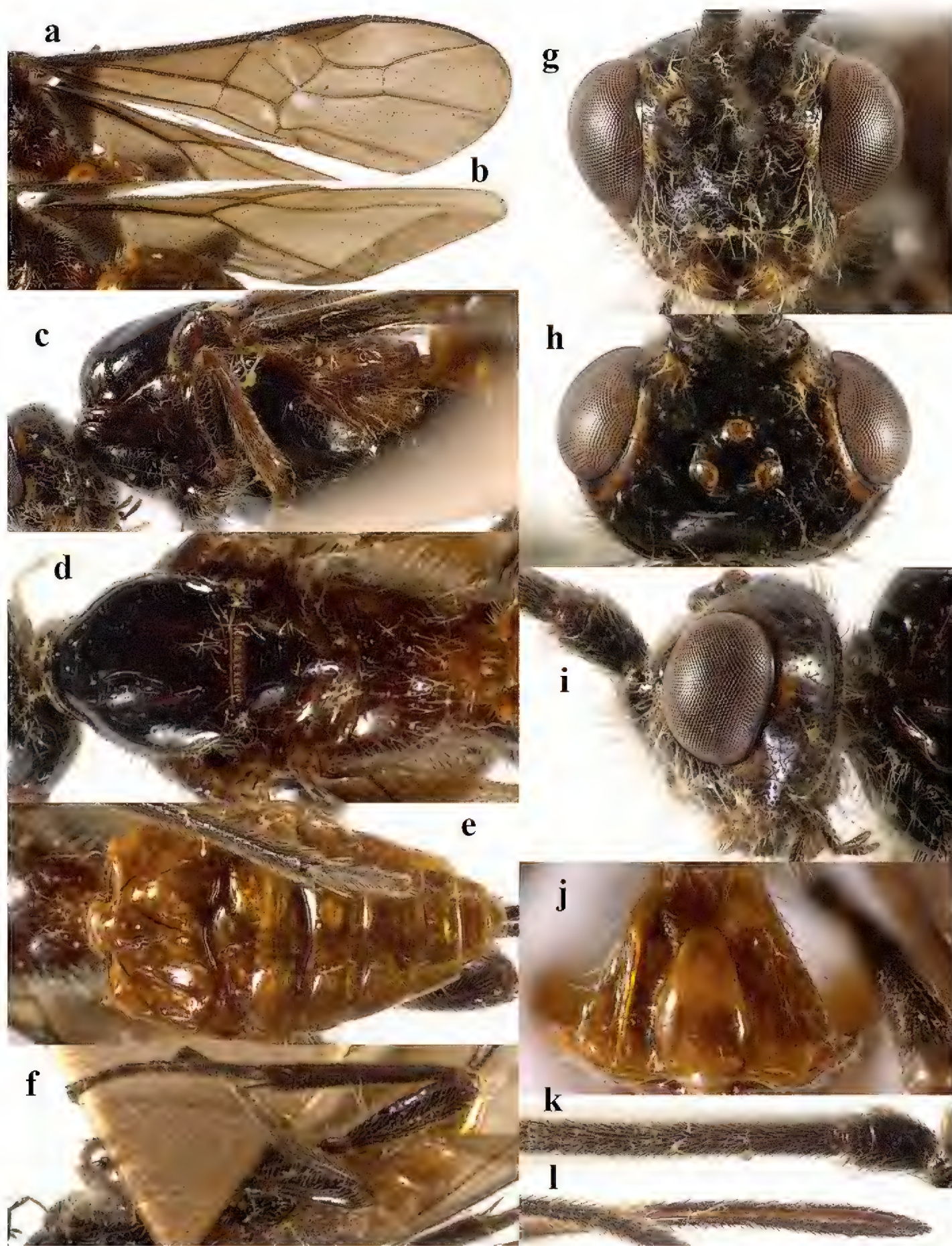


Figure 12. *Cyanopterus (Paravipio) jakuticus* (Tobias, 1973). ♀. **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** scapus outer side, lateral view **l** apex of ovipositor, lateral view.

medially, and sometimes with a short and somewhat protruding median carina; propodeum often smooth, without medio-longitudinal carina or groove; angle between veins 1-SR and C+SC+R of fore wing more than 75°; vein 1-SR+M of fore wing evenly

and strongly arched, forms with bases of vein 1-SR+M and 1-M a widened inverted “Y”; vein m-cu of fore wing widened; second submarginal cell of fore wing relatively long and parallel-sided; vein cu-a of fore wing interstitial or slightly postfurcal; hind wing vein 1r-m often distinctly shorter than SC+R1; claws simple; T I with parallel angulate sides of medial area, and comparatively flat, usually with lateral and medio-longitudinal carinae; T II usually with a triangular medio-basal triangular area connected to a medio-longitudinal carina apically, but absent near posterior margin of T II; second suture crenulate; hypopygium rather acute apically, usually beyond level of apex of metasoma; ovipositor normal, distinctly longer than body, subapically upper valve with nodus, and its lower valve with teeth ventrally.

Biology. Unknown.

Distribution. Oriental.

Note. This genus is new to China.

Key to Chinese species of the genus *Gammabracon* Quicke

- 1 Pterostigma uniformly yellow (Fig. 14a); hind legs blackish brown (Fig. 14f); hind wing vein SC+R1 1.7× longer than vein 1r-m (Fig. 14b); hind femur 4.8× as long as maximal width (Fig. 14f); fore wing vein cu-a interstitial (Fig. 14a); medio-basal area of T II relatively small (Fig. 14e) [China] *G. uniformis* sp. nov.
- Basal third of pterostigma yellow, and apical 2/3 dark brown (Fig. 16a); hind legs yellow, tarsus infusate (Fig. 16f); hind wing vein SC+R1 2.2× longer than vein 1r-m (Fig. 16b); hind femur 3.9× as long as maximal width (Fig. 16f); fore wing vein cu-a slightly postfurcal (Fig. 16a); medio-basal area of T II relatively large (Fig. 16e) [China]..... *G. wangi* sp. nov.

Gammabracon uniformis sp. nov.

<http://zoobank.org/F790A8C5-5EB7-44AA-A599-17FF139CA41D>

Figures 13, 14

Material examined. Holotype: ♀, China, Hainan Prov., Jianfengling, 6.V.1983, Gu Maobin, No. IOZ(E)1964585 (IZCAS).

Diagnosis. This new species is very similar to *Gammabracon scrobi* Quicke, 1984 [Indonesia], but can be separated from the latter by the following characters: wing membrane uniformly yellow (basal half yellow and apical half greyish brown in *G. scrobi*); anterior margin of scutellum with a shallow pit and metanotum without short carina anteriorly (anterior margin of scutellum with a deep pit and metanotum with short carina anteriorly); apical half of medio-longitudinal carina of T I absent (medio-longitudinal carina of T I complete); T IV striate anteriorly, remainder of tergite smooth (entirely smooth).

Description. Holotype, ♀, length of body 13.2 mm, of fore wing 12.2 mm, of ovipositor sheath 20.7 mm.



Figure 13. *Gammabracon uniformis* sp. nov., ♀, holotype, habitus, lateral view.

Head. Antenna incomplete, with 48 antennomeres remaining; third antennomere 1.5 and 1.6× longer than fourth and fifth, respectively; third and fourth antennomeres 1.8 and 1.3× longer than wide, respectively; length of maxillary palp 0.8× height of head; malar suture with sparse short setae (Fig. 14i); clypeus height: inter-tentorial distance: tentorio-ocular distance = 7: 11: 9; clypeus coarsely rugose, with sparse long setae; eye not emarginated (Fig. 14g); face coarsely sculptured, with some sparse and long setae (Fig. 14g); frons smooth, distinctly depressed behind antennal sockets, with a median groove (Fig. 14h); vertex smooth, with a few short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 2: 3: 8; temples largely smooth except for a few weak punctures, and with sparse short setae laterally, subparallel immediately behind eyes (Fig. 14h); in dorsal view length of eye 1.7× temple.

Mesosoma. Length of mesosoma 1.7× its height (Fig. 14c); notauli distinctly impressed (Fig. 14d); scutellar sulcus wide and deep, with crenulae (Fig. 14d); scutellum

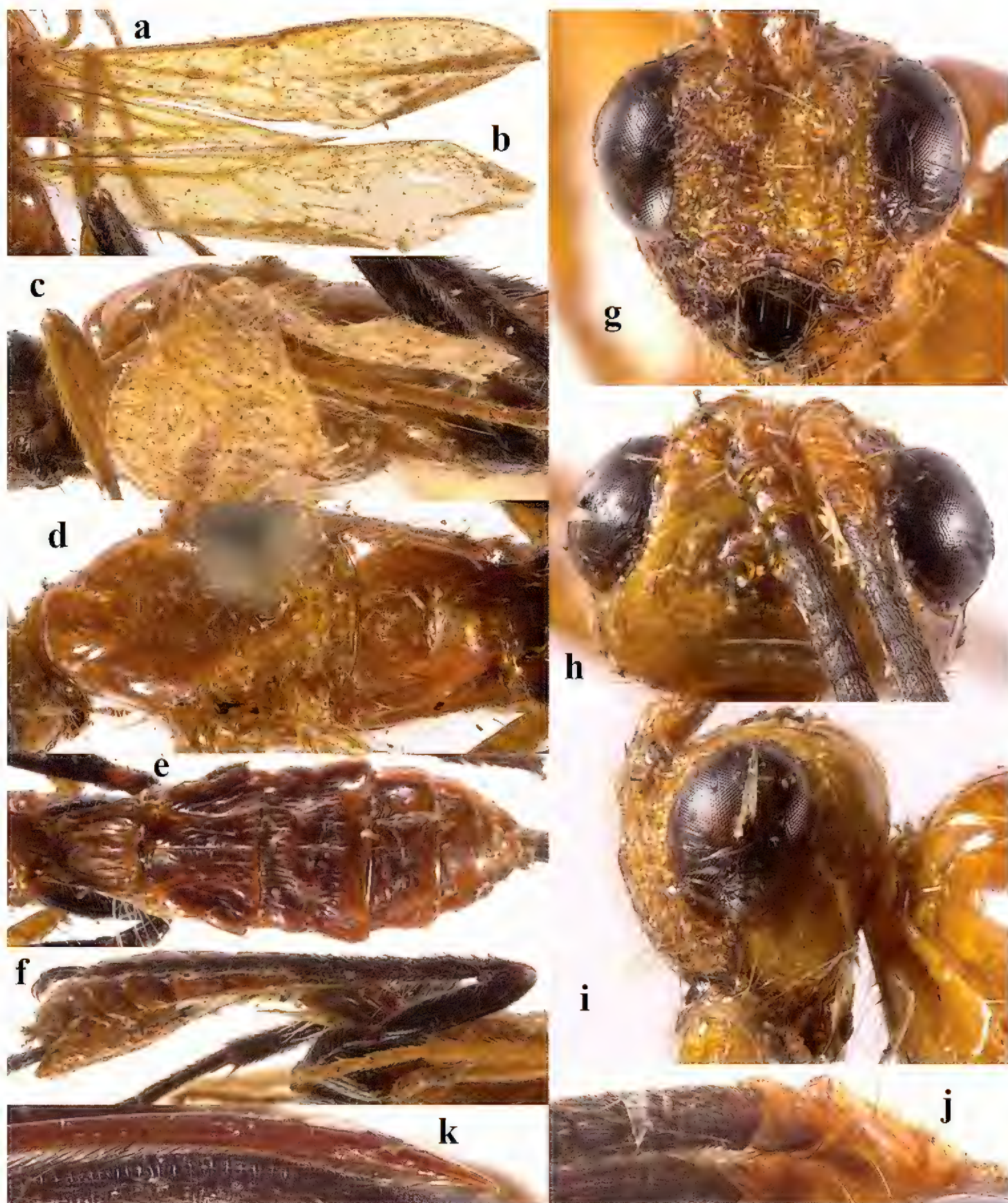


Figure 14. *Gammabracon uniformis* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** apex of ovipositor, lateral view.

with a weak emargination medio-anteriorly, and with some short setae posteriorly; metanotum convex medially, but without median carina anteriorly; propodeum largely smooth except for a few crenulae posteriorly, with sparse setae medially, and with dense long setae laterally (Fig. 14d).

Wings. Fore wing (Fig. 14a): SR1: 3-SR: r = 43: 26: 8; m-cu 1.2× longer than 3-CU1; cu-a interstitial. Hind wing (Fig. 14b): SC+R1 1.7× longer than 1r-m; anterior margin nearly not concave beyond the subbasal cell.

Legs. Length of fore femur: tibia: tarsus = 37: 43: 57; length of hind femur: tibia: basitarsus = 44: 63: 26; length of femur, tibia and basitarsus of hind leg 4.8, 10.5 and 6.5× their maximum width, respectively (Fig. 14f); hind tibial spurs 0.3 and 0.2× as long as hind basitarsus.

Metasoma. Length of T I 1.4× its apical width, median area convex and with a few longitudinal carinae (Fig. 14e); lateral grooves of T I smooth (Fig. 14e); T II strongly longitudinally rugose but antero-lateral areas smooth (Fig. 14e); medio-basal area of T II connected to medio-longitudinal carina apically but absent near posterior margin of T II, medio-longitudinal carina with some transverse crenulae laterally; antero-lateral areas of T II rather small, anterior grooves wide, with a few sparse crenulae (Fig. 14e); second suture deep and wide, with crenulae, more or less straight medially (Fig. 14e); T III longitudinally rugose but posteriorly and antero-lateral areas smooth, with a strong medio-longitudinal carina not reaching posterior margin of T, median area weakly raised and posteriorly defined by a deep transverse crenulate groove; T IV largely smooth but longitudinally rugose medially; T III and T IV with antero-lateral areas and grooves (T V weak); T V–VII smooth; hypopygium rather acute apically, reaching just beyond the level of apex of metasoma; ovipositor sheath 1.7× longer than fore wing.

Colour. Largely yellow (Fig. 13); antennomeres except scape and pedicel, eye, mandible apically, fore and middle tarsi apically, hind leg, claws, ovipositor sheath black (Figs 13, 14g, f); metasomal tergites reddish yellow (Fig. 14e); wing membrane, pterostigma, and veins yellow (Fig. 14a, b).

Biology. Unknown.

Distribution. China (Hainan).

Etymology. Named after the all yellow wing membrane, pterostigma and veins: *uniformis* is Latin for uniform.

***Gammabracon wangi* sp. nov.**

<http://zoobank.org/ADE461FA-1F50-4F3D-A55A-B2705BDB5369>

Figures 15, 16

Material examined. Holotype: ♀, China, Fujian Prov., Kangshang, 9.IX.1993, Wang Jiashe, No. 854314 (ZJUH).

Diagnosis. This new species is very similar to *Gammabracon uniformis* sp. nov., but can be separated from the latter by the following characters: basal third of pterostigma yellow, and apical 2/3 dark brown (uniformly yellow in *G. uniformis*); hind leg yellow, tarsus infusate (blackish brown); hind wing vein SC+R1 2.2× longer than vein 1r-m (1.7× vein 1r-m); hind femur 3.9× as long as its maximum width (4.8×); fore wing vein cu-a slightly postfurcal (interstitial); medio-basal area of T II relatively large (small).



Figure 15. *Gammabracon wangi* sp. nov., ♀, holotype, habitus, lateral view.

Description. Holotype, ♀, length of body 10.5 mm, of fore wing 9.7 mm, of ovipositor sheath 17.1 mm.

Head. Antenna with 61 antennomeres; apical antennomere strongly acute, $1.9\times$ longer than its maximum width (Fig. 16k); penultimate antennomere $1.3\times$ longer than

its maximum width, and $0.7\times$ as long as apical antennomere; median antennomeres $1.2\times$ longer than wide; third antennomere 1.3 and $1.4\times$ longer than fourth and fifth, respectively; third and fourth antennomeres 1.8 and $1.4\times$ longer than wide, respectively; length of maxillary palp $0.9\times$ height of head; malar suture with dense short setae (Fig. 16i); clypeus height: inter-tentorial distance: tentorio-ocular distance = $6: 11: 10$; clypeus coarsely rugose, with sparse long setae; eye weakly emarginate (Fig. 16g); face coarsely sculptured, with some sparse and long setae (Fig. 16g); frons smooth, distinctly depressed behind antennal sockets, with a median groove (Fig. 16h); vertex smooth, with a few short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = $5: 7: 18$; temples largely smooth except for a few weak punctures, and with sparse long setae laterally, subparallel immediately behind eyes (Fig. 16h); in dorsal view length of eye $1.6\times$ temple.

Mesosoma. Length of mesosoma $1.8\times$ its height (Fig. 16c); notauli distinctly impressed (Fig. 16d); scutellar sulcus wide and deep, with crenulae (Fig. 16d); scutellum with a weak emargination medio-anteriorly, and with some short setae posteriorly; metanotum convex medially, but without median carina anteriorly; propodeum largely smooth except for a few crenulae posteriorly, with sparse setae medially, and with dense long setae laterally (Fig. 16d).

Wings. Fore wing (Fig. 16a): SR1: 3-SR: r = $47: 31: 8$; 2-SR: 3-SR: r-m = $19: 31: 10$; m-cu $1.4\times$ longer than 3-CU1; cu-a weakly postfurcal. Hind wing (Fig. 16b): SC+R1 $2.2\times$ longer than 1r-m; anterior margin weakly concave beyond the subbasal cell.

Legs. Length of fore femur: tibia: tarsus = $34: 38: 52$; length of hind femur: tibia: basitarsus = $45: 77: 28$; length of femur, tibia and basitarsus of hind leg 3.9 , 11.8 and $9.3\times$ their maximum width, respectively (Fig. 16f); hind tibial spurs 0.3 and $0.2\times$ as long as hind basitarsus.

Metasoma. Length of T I $1.1\times$ its apical width, median area convex and coarsely sculptured but posteriorly smooth, with a medio-longitudinal carina posteriorly (Fig. 16j); lateral grooves of T I smooth (Fig. 16j); T II largely smooth, but with some oblique carinae besides medio-longitudinal carina (Fig. 16e); T II medio-basal area connected to medio-longitudinal carina apically, but absent near posterior margin of T; antero-lateral areas of T II small, strongly acute apically, anterior grooves wide, with some strong crenulae (Fig. 16e); second suture deep and wide, with crenulae, more or less straight medially (Fig. 16e); T III largely smooth, median area strongly raised and posteriorly defined by a deep sinuate transverse crenulate groove, median area with a few weak punctures laterally; T IV with transverse depression medially; T III and T IV with antero-lateral areas and grooves (of T V weak); T IV–VII smooth; hypopygium rather acute apically, protruding just beyond level of apex of metasoma; ovipositor sheath $1.8\times$ longer than fore wing.

Colour. Largely yellow (Fig. 15); antenna black (scapus yellow, with black stripe outer side) apical antennomeres (except for first-third antennomeres black) reddish yellow (Fig. 16i, k); eye, mandible apically, claws, part of dorsal carina and dorso-lateral carinae of T I, medio-longitudinal carina and lateral margins of medio-basal area of T



Figure 16. *Gammabracon wangi* sp. nov., ♀, holotype. **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** apex of antenna **l** apex of ovipositor, lateral view.

II, ovipositor sheath black (Figs 15, 16e, g, j); hind tarsus infusate (Fig. 16f); wing membrane yellow, pterostigma dark brown but basally yellow, veins largely brown, but fore wing vein 1-SR+M yellow (basally narrowly yellowish brown) (Fig. 16a, b).

Biology. Unknown.

Distribution. China (Fujian).

Etymology. Named after the name of the collector of holotype.

Genus *Ischnobracon* Baltazar, 1963

Figures 17–22

Ischnobracon Baltazar, 1963: 588; Quicke 1987: 117; Butcher and Quicke 2010: 2188.

Type species: *Ischnobracon bakeri* Baltazar, 1963.

Diagnosis. Body medium-sized to large; antenna longer than fore wing; terminal antennomere pointed, but not acute apically, median antennomeres distinctly wider than long; in lateral view scapus without double margin at inner side apically and strongly concave apico-laterally, ventrally ca. as long as or rarely slightly shorter than dorsally; eye large and glabrous, weakly emarginate; face weakly and sparsely punctate; clypeus moderately narrow and without dorsal carina, above clypeus with shallow triangular depression; malar suture moderately shallow; labio-maxillary complex normal, not or slightly elongate; frons weakly depressed, with some setae and a median groove; mesosoma smooth and shiny; notauli only impressed anteriorly; scutellar sulcus completely smooth; median area of metanotum relatively small; propodeum smooth and flattened; angle between veins 1-SR and C+SC+R of fore wing less than 40°; vein 1-SR+M of forewing usually straight, rarely slightly curved after arising from 1-M; forewing vein 3-CU1 usually more or less expanded posteriorly; second submarginal cell of fore wing distinctly expanded distally; forewing vein cu-a postfurcal or more or less interstitial; hind wing vein 2-SC+R usually interstitial or distinctly transverse (but longitudinal in *I. indiscretus*); hind wing with five to eight basal bristles; claws simple; fourth tarsal segment more or less protruding at inner side apically; metasoma in dorsal view relatively slender; T II with large rhombic medio-basal area and laterally depressed, resulting in a narrow medial part; T III often with large and raised antero-lateral areas; T III–V without deep oblique antero-lateral grooves; ovipositor with weak dorsal nodus and small ventral serrations subapically.

Biology. Unknown.

Distribution. Australasian; Oriental.

Note. This genus is newly recorded from China.

Key to Chinese species of the genus *Ischnobracon* Baltazar

- 1 Black dorsal patch of head not reaching eye orbits and guttiform (Fig. 18h); antenna blackish brown basally (Fig. 18j), antennomeres lightened medially to distally, scape with a reversed U-shaped yellow patch dorsally (Fig. 18k) [China] *I. guttatus* sp. nov.
- Black dorsal patch of head reaching eye orbits (Figs 20h, 22h); antenna entirely black, scape without yellow patch as above (Figs 20j, 22l, n) 2

- 2 Hind coxa with distinct piceous spot on outer side of coxa (Fig. 22k), and with or without a small dark patch on lower part of femur (Fig. 22f); base of hind wing with narrow glabrous areas on either side of vein cu-a (Fig. 22b) [China; India] *I. v-macula*
- Hind coxa and femur entirely yellow, without dark spots (Fig. 20f); base of hind wing largely with setae, only narrowly glabrous just distal to posterior half of vein cu-a (Fig. 20b) [China; Indonesia; Myanmar; Thailand] *I. hannongbuai*

***Ischnobracon guttatus* sp. nov.**

<http://zoobank.org/7979DF17-3122-46D1-BFB2-F1E4F9F4922F>

Figures 17, 18

Material examined. Holotype: ♀, China, Hainan Prov., Jianfengling, 29.IV.1983, Gu Maobin, No. IOZ(E)1964612 (IZCAS).

Diagnosis. This new species is very similar to *I. baltazarae* Quicke & Butcher, 2010 [Philippines], but can be separated from the latter by the following characters: scape blackish brown with a reversed U-shaped yellow spot dorsally (yellow with black lateral streak in *I. baltazarae*); second submarginal cell of fore wing relatively short, vein 2-M 2.8× as long as vein 2-SR ($3.45 \times$ vein 2-SR); fore wing vein cu-a distinctly curved and postfurcal (straight and interstitial); base of hind wing with rather narrow glabrous areas on either side of vein cu-a (hind wing subbasal cell glabrous on posterior half and with large glabrous area distal to vein cu-a); hind femur yellow, without black mark (hind femur black ventro-distally).

Description. Holotype, ♀, length of body 14.8 mm, of fore wing 12.0 mm, of ovipositor sheath 9.0 mm.

Head. Antenna incomplete, with 88 antennomeres remaining; median antennomeres 1.6× wider than their length; third antennomere 1.1 and 1.2× longer than



Figure 17. *Ischnobracon guttatus* sp. nov., ♀, holotype, habitus, lateral view.



Figure 18. *Ischnobracon guttatus* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** scapus outer side, dorsal view **l** apex of ovipositor, lateral view.

fourth and fifth respectively, the latter being 1.4× wider than its length; scapus 1.5× longer than its apical width (Fig. 18j); tentorio-ocular distance: inter-tentorial distance: distance between clypeus and antennal sockets = 7: 9: 14; shortest distance between eyes: head width: eye height = 18: 35: 17; shortest distance between posterior ocelli: shortest distance between posterior ocellus and eye: width of head behind eyes (occiput) = 4: 9: 34; occiput with sparse setae medially, and with dense long setae laterally (Fig. 18h).

Mesosoma. Length of mesosoma twice its height (Fig. 18c); notauli only impressed on anterior third of mesoscutum (Fig. 18d).

Wings. Fore wing (Fig. 18a): r: SR1: 3-SR = 8: 17: 19; 1-SR+M more or less straight; 2-SR: 3-SR: r-m = 8: 17: 8; 2-M 2.8× longer than 2-SR; cu-a strongly curved and postfurcal. Hind wing (Fig. 18b): base with a rather narrow glabrous area distal to cu-a; 2-SC+R distinctly transverse; 1r-m 1.9× longer than SC+R1.

Legs. Length of fore femur: tibia: tarsus = 24: 27: 38; fore basitarsus 4.2× longer than its maximum width; fore tarsus ventro-apically with rather dense and long setae; length of hind femur: tibia: basitarsus = 33: 48: 16; length of femur, tibia and basitarsus of hind leg 3.9, 8.0 and 4.0× their maximum width, respectively (Fig. 18f).

Metasoma. Metasomal tergites smooth (Fig. 18e); length of T I 1.6× its apical width, raised median area not depressed medially (Fig. 18e); median length of T II 1.1× its apical width; antero-lateral areas of T III large, apical width of T III 1.2× its median length (Fig. 18e); tergites with dense and long setae especially posteriorly except for the raised areas (Fig. 18e); ovipositor sheath 0.7× as long as fore wing.

Colour. Largely yellow (Fig. 17); eye, mandible apically, metanotum and propodeum blackish brown (Fig. 18d, g); antenna blackish brown, becoming yellow towards apex (Fig. 17); scapus with a reverse yellow U-shaped spot dorsally (Fig. 18k); around stemmaticum with a drop-shaped black spot (Fig. 18h); ovipositor sheath black (Fig. 17); wing membrane largely yellow but smoky grey apically; stigmal spot brown; marginal cell with a small brown spot anteriorly; pterostigma yellow; veins largely yellow (Fig. 18a, b).

Biology. Unknown.

Distribution. China (Hainan).

Etymology. Named after the surrounded area of stemmaticum with a drop-shaped black spot: *guttatus* is Latin for drop-shaped.

Ischnobracon hannongbuai Quicke & Butcher, 2010

Figures 19, 20

Ischnobracon hannongbuai Quicke & Butcher in Butcher and Quicke 2010: 2201.

Material examined. 1♀, China, Yunnan Prov., Xishuangbanna, Damenglong, 650 m, 11.VII.1958, Hong Chunpei, No. IOZ(E)1964525 (IZCAS); 1♀, China, Yunnan



Figure 19. *Ischnobracon hannongbuai* Quicke et Butcher, 2010, ♀, habitus, lateral view.

Prov., Xiaomengyang, 900 m, 5.V.1957, Pu Fuji, No. IOZ(E) 1964596 (IZCAS); 1♀, China, Yunnan Prov., Yiwubanna, MengLun, 650 m, 3.VIII.1959, Li Suofu, No. IOZ(E) 1964526 (IZCAS); 1♀, China, Yunnan Prov., Xishuangbanna, Meng'a, 1050 m, 16.X.1958, Chen Zhizi, No. IOZ(E) 1964628 (IZCAS).

Biology. Unknown.

Distribution. China (Yunnan); Indonesia; Myanmar; Thailand.

Note. This species is new to China.



Figure 20. *Ischnobracon hannongbuai* Quicke et Butcher, 2010. ♀ **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** apex of ovipositor, lateral view.

***Ischnobracon v-macula* (Cameron, 1899)**

Figures 21, 22

Bracon v-macula Cameron, 1899: 62.

Elphea v-macula (Cameron): Dover, 1925: 39.

Stenobracon v-macula (Cameron): Fahringer, 1928: 28.



Figure 21. *Ischnobracon v-macula* (Cameron, 1899), ♀, habitus, lateral view.

Ischnobracon v-macula (Cameron): Baltazar, 1972: 265; Butcher et Quicke 2010: 2208.

Bracon orientalis Cameron, 1899: 63.

Ischnobracon orientalis (Cameron): Baltazar, 1972: 265 (synonymy, lectotype designation); Shenefelt 1978: 1690.

Material examined. 1♀, China, Yunnan Prov., Xishuangbanna, Xiaomengyang, 850 m, 22.X.1957, Wang Shuyong, No. IOZ(E)1964524 (IZCAS); 1♀, China, Yun-



Figure 22. *Ischnobracon v-macula* (Cameron, 1899). ♀ **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** hind femur, lateral view **l** scapus outer side, lateral view **m** apex of ovipositor, lateral view **n**. apex of antenna.

nan Prov., Xishuangbanna, Mengla, 620–650 m, 10.VI.1959, Li Suofu, No. IOZ(E) 1964523 (IZCAS); 1♀, China, Yunnan Prov., Cheli, 620 m, 18.IV.1957, Zang Lingchao, No. IOZ(E) 1964537 (IZCAS).

Biology. Unknown.

Distribution. China (Yunnan); India.

Note. This species is newly recorded from China.

Genus *Monilobracon* Quicke, 1984

Figures 23–26

Monilobracon Quicke, 1984b: 39, 1987: 120; Papp 1998: 234. Type species: *Monilobracon speciosus* Quicke, 1984 (monobasic and original designation).

Diagnosis. Body medium-sized to large; terminal antennomere slightly acute apically; scapus often with a strong secondary edge on its inner side apically, distinctly removed from pedicellus and with more or less oblique and usually angulate outer side basally, and pedicellus more or less petiolate basally in dorsal view or pedicellus and scapus both strongly compressed; outer side of scapus distinctly angulate and oblique subbasally, but sometimes rounded; in lateral view scapus often ventrally longer than dorsally; lateral of antennal sockets usually with deep depression (often as oblique groove, but sometimes weak); eye glabrous, not or weakly emarginate; face medio-dorsally with a reversed Y-shaped impression or with a narrow groove, but sometimes obsolescent; clypeus moderately narrow, partly or completely flattened and without dorsal carina; malar suture moderately developed; labio-maxillary complex normal, not elongate; frons often strongly depressed, with a developed median groove; mesosoma largely smooth and shiny; notauli at least present anteriorly, sometimes complete; scutellar sulcus crenulate; metanotum strongly convex medially; propodeum largely smooth, sometimes with a short medio-longitudinal groove anteriorly, and often with crenulae posteriorly; angle between veins 1-SR and C+SC+R of fore wing more than 60°; fore wing vein 1-SR+M variable, more or less straight, or weakly curved to distinctly angled after arising from vein 1-M; hind wing vein C+SC+R with only one basal bristle; claws simple; metasomal tergites usually largely strongly sculptured, rarely smooth; T I with a medio-longitudinal carina posteriorly, dorsolateral carinae present; T II usually with a weakly to strongly raised medio-basal triangular area connected to medio-longitudinal carina apically, but absent near posterior margin of T II; T II–IV partly coarsely striate-rugose; hypopygium rather acute apically; ovipositor with dorsal nodus and ventral serrations subapically, often longer than body.

Biology. Unknown.

Distribution. Afrotropical; Australasian; Oriental; Palearctic.

Note. This genus is newly recorded from China.

1 Stemmaticum yellow (Fig. 24h); wing membrane with a small stigmal spot below parastigma (Fig. 24a); medio-basal area of T II relatively small and sub-lateral areas large (Fig. 24e); T IV smooth (Fig. 24e); metasomal tergites blackish brown, but sub-lateral areas of T II partly yellowish (Fig. 24e); ovipositor sheath 1.1–1.3× longer than fore wing (Fig. 23) [China] *M. longitudinalis* sp. nov.

– Stemmaticum blackish brown (Fig. 26h); wing membrane without a stigmal spot (Fig. 26a); medio-basal area of T II relatively large, without sub-lateral areas (Fig. 26e); basal half of T IV with striae (Fig. 26e); metasomal tergites blackish brown, but posterior margins of T III–VII whitish yellow (Fig. 26e); ovipositor sheath 2.0× longer than fore wing (Fig. 25) [China] *M. marginatus* sp. nov.

Figures 23, 24

Head. Antenna with 64 antennomeres; apical antennomere pointed and slightly acute, $2.1\times$ longer than its maximum width (Fig. 24l); penultimate antennomere $1.2\times$ longer than its maximum width, and $0.6\times$ as long as apical antennomere; median antennomeres $0.9\times$ longer than wide; third antennomere 1.3 and $1.4\times$ longer than fourth and fifth, respectively, the latter $1.2\times$ longer than wide; length of maxillary palp $0.8\times$ height of head; malar suture with sparse short setae, and with fine punctures (Fig. 24i); clypeus height: inter-tentorial distance: tentorio-ocular distance = 7: 10: 8; clypeus with sparse long setae; eye weakly emarginated (Fig. 24g); face largely glabrous except for a few short setae, and with some sparse punctures (Fig. 24g); eye height: shortest distance between eyes: head width = 4: 5: 10; frons largely smooth, strongly concave behind antennal sockets, with a developed median groove (Fig. 24h); vertex largely smooth except for a few weak punctures, with some sparse short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: mini-



Figure 23. *Monilobracon longitudinalis* sp. nov., ♀, holotype, habitus, lateral view.

distance between posterior ocellus and eye = 5: 6: 18; length of malar space $1.0\times$ basal width of mandible; temples largely glabrous except for a few short setae, and subparallel behind eyes (Fig. 24h); in dorsal view length of eye $1.4\times$ temple.

Mesosoma. Length of mesosoma $1.9\times$ its height (Fig. 24c); notauli impressed anterior half, shallow posteriorly (Fig. 24d); mesoscutum smooth, with sparse short setae (Fig. 24d); scutellar sulcus wide, moderately deep, and with crenulae (Fig. 24d); scutellum with dense short setae posteriorly; metanotum strongly convex medially (Fig. 24d); propodeum smooth, without medio-longitudinal groove anteriorly, with a few short crenulae posteriorly, with sparse setae medially, and with dense long setae laterally (Fig. 24d).

Wings. Fore wing (Fig. 24a): SR1: 3-SR: r = 38: 35: 7; 1-SR+M more or less straight, and $1.1\times$ longer than 1-M; 2-SR: 3-SR: r-m = 16: 35: 15; m-cu straight, and $4.0\times$ longer than 2-SR+M; cu-a slightly postfurcal. Hind wing (Fig. 24b): 1r-m transverse; SC+R1: 2-SC+R: 1r-m = 28: 4: 19.

Legs. Length of fore femur: tibia: tarsus = 5: 6: 9; length of hind femur: tibia: basitarsus = 38: 69: 21; length of femur, tibia, and basitarsus of hind leg 3.8, 9.9, and $5.3\times$ their maximum widths, respectively (Fig. 24f).

Metasoma. Length of T I $1.3\times$ its apical width, median area convex and with a medio-longitudinal carina, smooth anteriorly, and longitudinally rugose posteriorly (Fig. 24j); lateral grooves of T I sparsely crenulate (Fig. 24j); T II longitudinally rugose including medio-basal area, but antero-lateral areas smooth posteriorly (Fig. 24e); triangular medio-basal area of T II moderately large, attached to medio-longitudinal carina apically but absent near posterior margin of T II; antero-lateral areas of T II developed, longitudinally rugose anteriorly and smooth posteriorly, anterior grooves weakly and sparsely crenulate (Fig. 24e); second suture deep and crenulate, wide and curved medially, narrow laterally (Fig. 24e); T III largely longitudinally rugose but smooth posteriorly, antero-lateral areas weakly rugose; T III–V with antero-lateral areas, and crenulate transverse subposterior groove (Fig. 24e); T



Figure 24. *Monilobracon longitudinalis* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** scapus outer side, lateral view **l** apex of antenna **m** apex of ovipositor, lateral view.

IV–VII smooth, and with dense long setae posteriorly; hypopygium acute apically, reaching level of apex of metasoma; ovipositor sheath $1.1\times$ as long as fore wing.

Colour. Head and mesosoma largely yellow (Fig. 23); antenna, eye, and mandible apically black (Fig. 24g); fore and middle legs (except for tarsus apically and claws black) yellow, hind leg black (Fig. 24f); metasoma (except T I and T II dark brown) and ovipositor sheath black (Figs 23, 24e); wing membrane yellow, but black brown apically (hind wing including posterior margin medially), stigmal spot black brown, first subdiscal cell of fore wing with a blackish brown spot medio-posteriorly, pterostigma yellow but apically blackish brown, basal veins yellow and apical veins dark brown (Fig. 24a, b).

Variation. Length of body of female 14.9–15.9 mm, of fore wing of female 14.6–15.6 mm, and of ovipositor sheath 16.6–21.0 mm; antenna of female with 64–66 antennomeres; median antennomeres $0.9\text{--}1.2\times$ longer than wide; face sometimes with dense short setae; length of mesosoma $1.7\text{--}1.9\times$ its height; fore wing vein SR1 $0.9\text{--}1.1\times$ longer than vein 3-SR; ovipositor sheath $1.1\text{--}1.3\times$ as long as fore wing; second-ninth antennomeres sometimes infusate.

Biology. Unknown.

Distribution. China (Yunnan).

Etymology. Named after the largely longitudinally rugose T I–III: *longitudinalis* is Latin for longitudinal.

***Monilobracon marginatus* sp. nov.**

<http://zoobank.org/9B34C73B-9D24-42ED-BE4D-75EFA497777C>

Figures 25, 26

Material examined. Holotype: ♀, China, Yunnan Prov., Xishuangbanna, Xiaomengyang, 850 m, 23.VI.1957, Zang Lingchao, No. IOZ(E)1964556 (IZCAS).

Diagnosis. This new species is very similar to *Monilobracon longitudinalis* sp. nov., but can be separated from the latter by the following characters: stemmaticum blackish brown (yellow in *M. longitudinalis*); fore wing without a stigmal spot (with a blackish brown stigmal spot); medio-basal area of T II relatively large and without sub-lateral areas (medio-basal are relatively small, and with large sublateral areas); basal half of T IV with striae (smooth); metasomal tergites blackish brown, but posterior margins of T III–VII whitish yellow (metasomal tergites blackish brown, but sublateral areas of T II partly yellowish); ovipositor sheath $2.0\times$ longer than fore wing ($1.1\text{--}1.3\times$).

Description. Holotype, ♀, length of body 13.6 mm, of fore wing 12.7 mm, of ovipositor sheath 25.0 mm.

Head. Antenna incomplete, with 19 antennomeres remaining; median antennomeres as long as wide; third antennomere 1.2 and $1.3\times$ longer than fourth and fifth, respectively, the latter $1.2\times$ longer than wide; maxillary palp incomplete; malar suture with sparse short setae, and finely sculptured (Fig. 26i); clypeus height: inter-tentorial distance: tentorio-ocular distance = 7: 9: 8; clypeus with sparse short setae; eye weakly



Figure 25. *Monilobracon marginatus* sp. nov., ♀, holotype, habitus, lateral view.

emarginate (Fig. 26g); face coarsely sculptured (Fig. 26g); eye height: shortest distance between eyes: head width = 19: 25: 48; frons largely smooth, strongly concave behind antennal sockets, with a distinct median groove (Fig. 26h); vertex largely smooth except for a few weak punctures, with some sparse short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 5: 7: 16; length of malar space equal to basal width of mandible; temples largely glabrous except for a few short setae, and weakly narrowed behind eyes (Fig. 28h); in dorsal view length of eye $1.5\times$ temple.

Mesosoma. Length of mesosoma $1.5\times$ its height (Fig. 26c); notauli impressed in anterior half of mesoscutum, shallow posteriorly (Fig. 26d); mesoscutum smooth, with sparse short setae (Fig. 26d); scutellar sulcus rather wide, moderately deep, and with crenulae (Fig. 26d); scutellum with dense short setae posteriorly; metanotum strongly convex medially (Fig. 26d); propodeum smooth, with short medio-longitudinal groove anteriorly, and with few short crenulae posteriorly, with sparse setae medially, and with dense long setae laterally (Fig. 26d).

Wings. Fore wing (Fig. 26a): SR1: 3-SR: r = 36: 26: 7; 1-SR+M weakly and evenly curved, and $1.6\times$ longer than 1-M; 2-SR: 3-SR: r-m = 11: 26: 7; m-cu straight, and $2.0\times$ longer than 2-SR+M; cu-a interstitial. Hind wing (Fig. 26b): 1r-m longitudinal; SC+R1: 2-SC+R: 1r-m = 20: 4: 19.

Legs. Length of fore femur: tibia: tarsus = 29: 32: 46; length of hind femur: tibia: basitarsus = 40: 56: 17; length of femur, tibia and basitarsus of hind leg 5.3, 11.2 and $5.7\times$ their maximum width, respectively (Fig. 26f).

Metasoma. Length of T I $1.2\times$ its apical width, median area convex and strongly longitudinally rugose, with a medio-longitudinal carina (Fig. 26j); lateral grooves of T I crenulate (Fig. 26j); T II longitudinally rugose including medio-basal area, but smooth posterior-laterally (Fig. 26e); triangular medio-basal area of T II very large, attached with



Figure 26. *Monilobracon marginatus* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** scapus outer side, lateral view **l** apex of ovipositor, lateral view.

medio-longitudinal carina apically absent near posterior margin of T II; antero-lateral areas of T II absent, anterior grooves moderately impressed and crenulate (Fig. 26e); second suture deep and crenulate, wide and curved medially, narrow laterally (Fig. 26e); T III largely longitudinally rugose except for smooth posteriorly, antero-lateral areas weak and

smooth posteriorly; T IV longitudinally rugose medio-anteriorly, and with weak antero-lateral areas; T V–VII smooth and antero-lateral areas absent (Fig. 26e); hypopygium acute apically, reaching level of apex of metasoma; ovipositor sheath 2.0× as long as fore wing.

Colour. Head and mesosoma largely yellow (Fig. 25); antenna, eye, stemmaticum and mandible apically, black (Fig. 28g, h); fore and middle legs (but tarsus apically and claws black) yellow, hind leg black (coxa infusate basally) (Fig. 26f); metasoma largely black, posterior margins of T III–VII whitish yellow (Fig. 26e); ovipositor sheath black (Fig. 25); wing membrane yellow, but grey brown apically and hind wing also medio-posteriorly), pterostigma (but apically blackish brown) and veins yellow (Fig. 26a, b).

Biology. Unknown.

Distribution. China (Yunnan).

Etymology. Named after the whitish yellow posterior margins of the T III–VII: *marginatus* is Latin for margin.

***Parallobracon* gen. nov.**

<http://zoobank.org/3A4A4BF7-6E4A-444E-AD8B-9A7F1D032B3B>

Figures 27, 28

Type species. *Parallobracon prolatus* sp. nov.

Diagnosis. Antennomeres (except scape and pedicel) square; scapus rather slender, and in lateral view without double margin at inner side apically and apex strongly protruding ventrally; eye glabrous, not emarginated; face flattened in lateral view; clypeus flat and with distinct dorsal carina; malar suture present but weak, with dense short setae; labio-maxillary complex normal, not elongate; frons with strong median groove, largely smooth; notauli quite shallow, and impressed anteriorly on disc; scutellar sulcus comparatively narrow, and sparsely crenulate; metanotum convex medially, but without median carina anteriorly; propodeum smooth, and without medio-longitudinal carina or groove; first discal cell of fore wing nearly parallel-sided and ca. 3.0× longer than vein m-cu; vein 1-SR+M of fore wing straight; vein 1r-m of hind wing ca. 5.0× longer than vein 2-SC+R; vein 1-SR of fore wing distinctly oblique and pointing basad of vein cu-a, angle with vein C+SC+R ca. 55°; fore wing vein cu-a weakly postfurcal; vein 2-SC+R of hind wing transverse, distinctly shorter than vein 1r-m; hind wing with densely setae basally; claws simple; legs more or less with sparsely setae; in dorsal view, metasoma ovoid; median area of T I developed and coarsely sculptured posteriorly; medio-basal area of T II wide sub-basally and acute apically, latero-basal areas triangular and medium-sized and posterior half of tergite with pair of diverging depressions; second suture deep and wide, crenulate, narrowed and curved upward laterally, weakly curved medially; T III with developed antero-lateral areas and posterior margin of tergite sinuate, and 3.8× wider than its median length (excluding its basal groove); T III–V with crenulate transverse subposterior groove; T III–VII largely smooth; ovipositor with minute ventral teeth and without dorsal nodus.

Distribution. Oriental (China).

Etymology. Named after the nearly parallel-sided first discal cell of the fore wing (*parallelus* is Latin for “sides of equal distance”). Gender: masculine.

Note. This new genus will run in existing keys to *Cyanopterus* Haliday, 1835 (e.g., Belokobylskij 2000), but can be separated from the latter by the following characters: first discal cell of fore wing nearly parallel-sided and elongate (first discal cell of fore wing widened basally in *Cyanopterus*); vein 1r-m of hind wing quite long and ca. 5.0× longer than vein 2-SC+R (vein 1r-m of hind wing at most ca. 2.0× longer than vein 2-SC+R in *Cyanopterus*); vein 1-SR of fore wing distinctly oblique and pointing basad of vein cu-a (less oblique and pointing to vein cu-a in *Cyanopterus*); second submarginal cell of fore wing widened distally (second submarginal cell of fore wing parallel-sided in *Cyanopterus*); apex of scapus strongly protruding ventrally (apex of scapus slightly protruding ventrally in *Cyanopterus*); clypeus with distinct dorsal carina (clypeus usually without dorsal carina in *Cyanopterus*).

***Parallobracon prolatus* sp. nov.**

<http://zoobank.org/2E01D4E3-D4CE-48D3-82E7-3A22D5E957F1>

Figures 27, 28

Material examined. *Holotype*: ♀, China, Zhejiang Prov., Hangzhou, 26.VI.1935, Zhu Ruzuo (ZJUH). *Paratype*: 1♀1♂, China, Zhejiang Prov., Hangzhou, 17.VI.1934, Zhu Ruzuo (ZJUH).

Diagnosis. T II of the new species is similar to that of *Cyanopterus oriens* Belokobylskij, 2000, from Far East Russia (e.g., size and shape of medio-basal area and with pair of diverging depressions), but can be separated by having first discal cell of fore wing parallel-sided and vein 1-SR+M straight (widened basally and vein 1-SR+M weakly bent in *C. oriens*), vein 1r-m of hind wing ca. 5 × longer than vein 2-SC+R (ca. equal in *C. oriens*), vein 1-SR of fore wing distinctly oblique and pointing basad of vein cu-a (less oblique and pointing to vein cu-a in *C. oriens*), second submarginal cell of fore wing widened distally (parallel-sided in *C. oriens*) and apex of scapus strongly protruding ventrally (slightly protruding in *C. oriens*).

Description. Holotype, ♀, length of body 7.6 mm, of fore wing 7.7 mm, of ovipositor sheath 4.9 mm.

Head. Antenna incomplete, only remaining with scapus and pedicellus; malar suture with dense short setae (Fig. 28i); clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 6: 7; clypeus with sparse short setae; eye weakly emarginated (Fig. 28g); face weakly convex medially and weakly granulate, with some sparse punctures laterally (Fig. 28g); eye height: shortest distance between eyes: head width = 17: 20: 40; frons largely smooth, weakly concave behind antennal sockets, with a strong median groove (Fig. 28h); vertex smooth, but with some sparse short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 1: 1: 2; temples largely glabrous except for a few short setae, and subparallel behind eyes (Fig. 28h).

Mesosoma. Length of mesosoma 1.9× its height (Fig. 28c); notauli impressed anteriorly half (Fig. 28d); mesoscutum smooth, with a few sparse setae (Fig. 28d); scutellar sulcus narrow, moderately deep, and with crenulae (Fig. 28d); scutellum with sparse short setae posteriorly; metanotum strongly convex medially (Fig. 28d); propodeum



Figure 27. *Parallobracon prolatus* gen. et sp. nov., ♀, holotype, habitus, lateral view.

smooth, without longitudinal carinae or groove, with sparse setae medially, and with dense long setae laterally (Fig. 28d).

Wings. Fore wing (Fig. 28a): SR1: 3-SR: r = 21: 13: 5; 1-SR+M more or less straight, and 1.9× longer than 1-M; 2-SR: 3-SR: r-m = 14: 26: 13; angle between 1-SR and C+SC+R ca. 75°; m-cu straight; 2-SR+M rather short; cu-a slightly postfurcal. Hind wing (Fig. 28b): SC+R1: 2-SC+R: 1r-m = 17: 3: 13.

Legs. Length of fore femur: tibia: tarsus = 27: 31: 45; length of hind femur: tibia: basitarsus = 37: 53: 21; length of femur, tibia and basitarsus of hind leg 3.5, 6.6 and 5.3× their maximum width, respectively (Fig. 28f); hind tibial spurs 0.35 and 0.40 × as long as hind basitarsus.

Metasoma. Length of T I 1.1× its apical width, median area convex, anteriorly half smooth and posteriorly half coarsely sculptured (Fig. 28j); lateral grooves of T I sparsely crenulate (Fig. 28j); T II largely smooth except medially (Fig. 28e); triangular medio-basal area of T II large and smooth, with a few short oblique carinae connected laterally, and acute apically, but not attached with medio-longitudinal carina; antero-lateral areas of T II developed and smooth, anterior grooves moderately wide and sparsely crenulate (Fig. 28e); second suture deep and crenulate, wide and weakly



Figure 28. *Parallobracon prolatus* gen. et sp. nov., ♀, holotype (a–j), paratype (k) **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** first metasomal tergite, dorsal view **k** apex of ovipositor, lateral view.

curved medially, narrow laterally (Fig. 28e); T III with antero-lateral areas; T III–V with crenulate transverse subposterior groove (Fig. 28e); T III–VII largely smooth, and with some sparse short setae posteriorly; hypopygium acute apically, not reaching level of apex of metasoma; ovipositor sheath $0.6\times$ as long as fore wing.

Colour. Head and mesosoma largely reddish yellow (Fig. 27); antenna, eye, mandible apically, stemmaticum, propodeum medially and posteriorly, blackish brown (Fig. 28d, g, h); fore legs (but claws dark brown) reddish yellow, middle and hind legs dark brown (Fig. 28f); metasoma and ovipositor sheath black brown (Figs 27, 28e); wing membrane greyish brown, pterostigma and veins dark brown (Fig. 28a, b).

Variation. Length of body of female 7.6–7.7 mm, of fore wing of female 7.7 mm, and of ovipositor sheath 4.2–4.9 mm; antenna of paratype female incomplete, with 30 antennomeres remaining; third antennomere $1.7\times$ longer than its maximum width, 1.2 and $1.3\times$ longer than fourth and fifth, respectively, the latter $1.3\times$ longer than wide; ovipositor sheath 0.5 – $0.6\times$ as long as fore wing.

Male. Length of body of male 7.8 mm, of fore wing of male 7.9 mm; antenna of male with 44 antennomeres; Length of mesosoma $1.7\times$ its height; fore wing vein cu-a interstitial; length of T I $1.0\times$ its apical width; other characters as in female.

Biology. Unknown.

Distribution. China (Zhejiang).

Etymology. Named after the long and slender scapus which strong elongated ventrally: *prolatus* is Latin for elongated.

Genus *Pseudospinaria* Enderlein, 1905

Figures 29, 30

Pseudospinaria Enderlein, 1905: 229; Quicke 1987: 127. Type species: *Spinaria attenuata* Westwood, 1882 (Monobasic and original designation).

Diagnosis. Body medium-sized to large; terminal antennomere slender, strongly acute apically; scapus in lateral view basally rounded and at inner side usually with narrow apical ledge, concave apico-laterally, ventrally shorter than dorsally; eye glabrous, weakly emarginate; face coarsely sculptured; clypeus narrow and without dorsal carina; malar suture moderately developed, often with long and dense setae; labio-maxillary complex normal, not elongate; frons broadly impressed, with some setae and median groove; vertex and temples transversely rugose; notauli complete; mesoscutum with deep punctures near the notauli; metanotum with median carina protruding over propodeum posteriorly, and with a complete mid-longitudinal carina; propodeum coarsely punctate; angle between veins 1-SR and C+SC+R of fore wing ca. 60° ; vein r of fore wing long, (nearly) ca. as long as vein 2-SR; fore wing vein 2-SR sinuate; vein 1-R1 of fore wing distinctly longer than pterostigma; fore wing vein cu-a slightly postfurcal; second submarginal cell of fore wing slender, but somewhat widened apically; tarsal claws with an additional tooth; basal lobes of claws rounded; T I without a medio-longitudinal carina; T II with wide triangular medio-basal area, area reaching apex

of tergite or nearly so; T IV–VI with lateral teeth; T VII of female with medio-apical tooth (absent in male); ovipositor with dorsal nodus and ventral serrations subapically; ovipositor sheath 0.1–0.3× as long as fore wing.

Biology. Unknown.

Distribution. Oriental.

Note. This genus is newly recorded from China. Of the two described species, only one species is recorded from China.

***Pseudospinaria attenuata* (Westwood, 1882)**

Figures 29, 30

Spinaria attenuata Westwood, 1882: 30; Szépligeti 1902: 45.

Pseudospinaria attenuata (Westwood): Enderlein, 1905: 229.

Material examined. 1♀, China, Yunnan Prov., Xishuangbanna, Xiaomengyang, 850 m, 22.X.1957, Wang Shuyong, No. IOZ(E)1964528 (IZCAS); 1♀, China, Yunnan Prov., Xishuangbanna Menghai, 1100 m, 14.VIII.1957, Wang Shuyong, No. IOZ(E)1964530



Figure 29. *Pseudospinaria attenuata* (Westwood, 1882), ♀, habitus, lateral view.

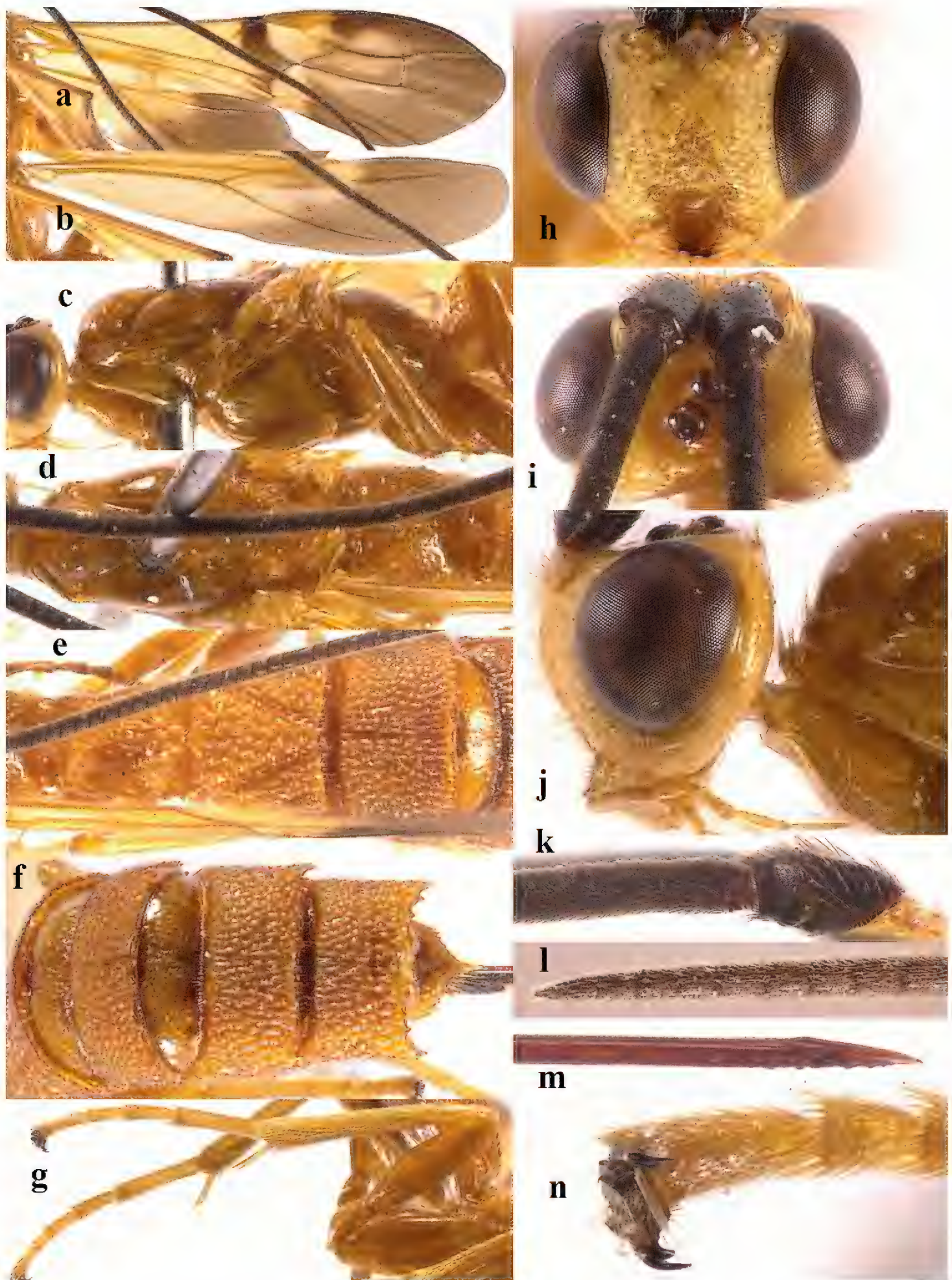


Figure 30. *Pseudospinaria attenuata* (Westwood, 1882). ♀ **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** first to third metasomal tergites, dorsal view **f** fourth to seventh metasomal tergites, dorsal view **g** hind leg, lateral view **h** head, anterior view **i** head, dorsal view **j** head, lateral view **k** scapus outer side, lateral view **l** apex of antenna **m** apex of ovipositor, lateral view **n** claws, oblique view.

(IZCAS); 1♀, China, Yunnan Prov., Xishuangbanna, Lancang, 1000 m, 30.VII.1957, Zang Lingcao, No. IOZ(E)1964529 (IZCAS); 1♀, China, Yunnan Prov., Xishuangbanna, Mengla, 620–650 m, 15.XI.1958, Zhang Yiran, No. IOZ(E)1964527 (IZCAS); 1♀, China, Hainan Prov., Shuiman, 640 m, 25.V.1960, Li Suofu, No. IOZ(E)1964637 (IZCAS).

Biology. Unknown.

Distribution. China (Hainan, Yunnan); Laos, Malaysia.

Note. This species is newly recorded from China.

Genus *Vipiomorpha* Tobias, 1962

Figures 31–36

Vipiomorpha Tobias, 1962: 1193. Type-species: *Vipiomorpha ypsilon* Tobias, 1962 (monobasic and original designation).

Diagnosis. Body small sized to medium-sized, and rather slender; terminal antennomere robust and acute apically; in lateral view scapus without double margin at inner side apically, not or slightly concave apico-laterally, ventrally weakly shorter than dorsally; eye glabrous, weakly emarginate; face largely smooth, sometimes with some sparse punctures medially; clypeus moderately narrow, dorsal clypeal carina developed (but in the Afrotropical species *Vipiomorpha rugosa* (Szépligeti, 1913) absent); malar suture moderately developed, often with dense setae; labio-maxillary complex normal, not elongate; frons often strongly depressed, with a strong median groove; notauli strongly developed and complete; mesopleuron smooth, rarely with a longitudinal impression posteriorly; metapleuron smooth and shiny; metapleural flange present; propodeum punctate-rugose medially, and more pronounced postero-medially than anteriorly, with a complete medio-longitudinal groove; angle between veins 1-SR and C+SC+R of fore wing ca. 45°; marginal cell of fore wing short and elongate elliptical, vein 1-R1 shorter than pterostigma or ca. as long (at most 1.2× longer); second submarginal cell of fore wing nearly parallel-sided; fore wing veins 1-M and 1-SR+M straight; forewing vein r less than 0.5× length of m-cu; base of hind wing often with a large glabrous area; hind wing vein 1r-m distinctly oblique, and much shorter than vein SC+R1; basal lobes of claws blunt or rounded; metasoma often long and more or less slender; median area of first metasomal strongly rugose, usually with well-developed dorso-lateral carina but without medio-longitudinal carinae; lateral grooves of T I remain far removed from lateral margin of tergite; T II usually with raised smooth, shiny and large antero-lateral areas; remainder of tergite usually strongly rugose; second suture crenulate; T III usually rugose, with smooth antero-lateral areas; T III–V with or without antero-lateral areas; hypopygium extending beyond the apex of the metasomal tergites; ovipositor with dorsal nodus and ventral serrations subapically.

Biology. Unknown.

Distribution. Afrotropical; Oriental; Palaearctic.

Note. This genus is newly recorded from the Oriental region and China; it is a small genus including three species, here we report two new species and one previously described species from China.

Key to Chinese species of the genus *Vipiomorpha* Tobias

- 1 Notauli relatively shallow, smooth (Fig. 32d); T I 1.5× as long as its apical width; metasomal tergites yellowish brown, without spots (Fig. 32e); head largely blackish brown dorsally (Fig. 32h), or at least (male) stemmaticum black brown [China] *V. sulcata* sp. nov.
- Notauli relatively deep, at least crenulate anteriorly (Figs 34d, 36d); T I 1.0–1.2× as long as its apical width; metasomal tergites with distinct spots (Figs 34e, 36e); head yellow dorsally (Figs 34h, 36h) 2
- 2 In dorsal view length of eye 1.5× temple (Fig. 34h); mesoscutum black (Fig. 34d); hind wing vein 2-SC+R 0.7× as long as vein 1r-m (Fig. 34b); median spots of T II not touching lateral spots (Fig. 34e); T V largely smooth (Fig. 34e); scape yellowish brown, with a blackish brown streak dorsally (Fig. 34j); pterostigma blackish brown (Fig. 34a) [China; Korea; Russia] *V. ypsilon*
- In dorsal view length of eye 2.3× temple (Fig. 36h); mesoscutum reddish yellow (Fig. 36d); hind wing vein 2-SC+R 1.2× as long as vein 1r-m (Fig. 36b); median spots of T II touching lateral spots (Fig. 36e); T V largely rugose (Fig. 36e); scape black brown (Fig. 36j); pterostigma yellowish brown (Fig. 36a) [China] *V. yunnanensis* sp. nov.

Vipiomorpha sulcata sp. nov.

<http://zoobank.org/24D47FE0-D722-4060-B9EF-A74F12F7080B>

Figures 31, 32

Material examined. *Holotype*: ♀, China, Yunnan Prov., Jinghong, 9.IV.1981, He Junhua, No. 811668 (ZJUH). *Paratype*: 1♂, China, Yunnan Prov., Ruili, 6.V.1981, He Junhua, No. 813014 (ZJUH).

Diagnosis. This new species is very similar to *Vipiomorpha ypsilon* Tobias, 1962 [China; Korea; Russia], but can be separated from the latter by the following characters: notauli relatively shallow, smooth, not crenulate (deep, at least crenulate anteriorly, in *V. ypsilon*); T I 1.5× as long as apical width (1.0–1.2×); metasomal tergites yellowish brown, without spots (with distinct spots); T V largely coarsely sculptured (largely smooth); head largely blackish brown dorsally, or at least (male) stemmaticum blackish brown (head yellow dorsally).

Description. Holotype, ♀, length of body 5.4 mm, of fore wing 5.3 mm, of ovipositor sheath 7.0 mm.

Head. Antenna with 42 antennomeres; apical antennomere acute, 1.7× longer than its maximum width (Fig. 32k); third antennomere 1.2 and 1.3× longer than fourth and fifth, respectively, the latter 1.5× longer than wide; median antennomeres



Figure 31. *Vipiomorpha sulcata* sp. nov., ♀, holotype, habitus, lateral view.

ca. $1.5\times$ longer than their widths; malar suture with sparse short setae and with fine punctures (Fig. 32i); clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 15: 7; clypeus smooth and shiny, with a single row of sparse and long setae; eye weakly emarginate (Fig. 32g); face largely smooth, with some sparse and long setae (Fig. 32g); eye height: shortest distance between eyes: head width = 23: 22: 42; frons smooth, strongly depressed behind antennal sockets, with a strong median groove (Fig. 32h); vertex smooth, but with some sparse short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 8: 3: 10; temples largely glabrous except for a few short setae, and subparallel immediately behind eyes (Fig. 32h).

Mesosoma. Length of mesosoma $1.6\times$ its height (Fig. 32c); anterior margin of pronotum with a single row of short setae; notauli deeply impressed (Fig. 32d); mesoscutum smooth, with short and moderately dense setae (Fig. 32d); middle lobe of mesoscutum strongly convex medially; scutellar sulcus narrow and deep, with crenulae (Fig. 32d); scutellum with dense short setae posteriorly; metanotum strongly convex medially (Fig. 32d); propodeum smooth, with a complete medio-longitudinal groove, with sparse setae medially, and with dense long setae laterally (Fig. 32d).

Wings. Fore wing (Fig. 32a): r very short; SR1: 3-SR: r = 8: 7: 1; 1-SR+M straight, and $1.2\times$ longer than 1-M; 2-SR: 3-SR: r-m = 6: 11: 6; first submarginal cell of forewing short; vein SR1 ends ca. half-way between pterostigma and wing apex; cu-a interstitial. Hind wing (Fig. 32b): SC+R1: 2-SC+R: 1r-m = 8: 3: 5.

Legs. Length of fore femur: tibia: tarsus = 11: 13: 16; length of hind femur: tibia: basitarsus = 39: 58: 23; length of hind basitarsus $5.75\times$ its maximum width (Fig. 32f).

Metasoma. Length of T I $1.5\times$ its apical width, median area convex and strongly rugose (Fig. 32e); lateral grooves of T I sparsely crenulate (Fig. 32e); median length of T II $0.7\times$ as long as its apical width; T II strongly rugose but antero-lateral areas smooth (Fig. 32e); T II without medio-basal area; antero-lateral areas of T II developed and smooth, anterior grooves wide, with a few crenulae (Fig. 32e); second suture deep and wide, with crenulae, slightly urved medially (Fig. 32e); median length of T III $0.5\times$ as long as its apical width; T III and T IV with antero-lateral areas (of T IV weak), and crenulate transverse subposterior groove (Fig. 32e); T V with weakly crenulate transverse subposterior groove; T III–V strongly rugose; T VI–VII largely smooth,



Figure 32. *Vipiomorpha sulcata* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** apex of antenna **l** apex of ovipositor, lateral view.

and with some long setae posteriorly; hypopygium rather acute apically, reaching far beyond level of apex of metasoma; ovipositor sheath $1.32 \times$ as long as fore wing.

Colour. Largely yellowish brown (Fig. 31); head blackish brown except for face and mandible (but apically blackish brown) yellow (Fig. 32g, h); for legs (but claws blackish brown) yellow; ovipositor sheath black (Fig. 31); wing membrane yellow, pterostigma and veins yellowish brown (Fig. 32a, b).

Male. Length of body of male 4.6 mm, of fore wing of male 4.3 mm; antenna of male with 42 antennomeres; length of forewing vein SR1: 3-SR: r = 8: 6: 1; length of T I 1.7× its apical width; T IV with noticeably antero-lateral areas; head largely yellow, area surrounded stemmaticum black brown; other characters similar with the female.

Biology. Unknown.

Distribution. China (Yunnan).

Etymology. Named after the well-developed medio-longitudinal groove of the propodeum: *sulcus* is Latin for groove.

***Vipiomorpha ypsilon* Tobias, 1962**

Figures 33, 34

Vipiomorpha ypsilon Tobias, 1962: 1194.

Material examined. 14♀♀17♂♂, China, Liaoning Prov., Dalian, 16.VII.1994, Lou Juxian, No. 975837, 952150, 952217, 952170, 952171, 952204, 952169, 952147, 952372, 952359, 952317, 952323, 952329, 952339, 952288, 952206, 952331, 952179, 952206, 952194, 952203, 952335, 952191, 952157, 952360, 952215,



Figure 33. *Vipiomorpha ypsilon* Tobias, 1962, ♀, habitus, lateral view.

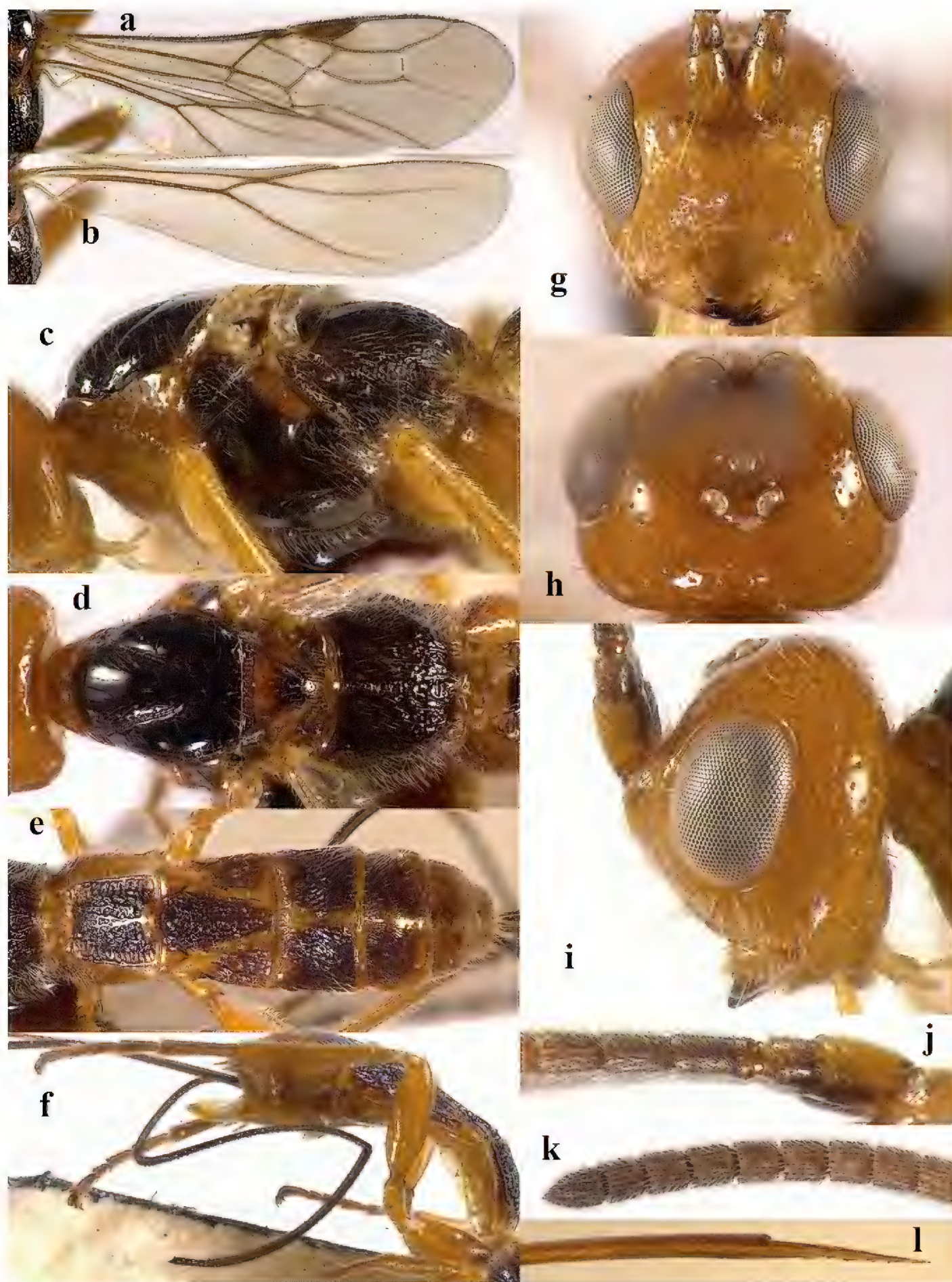


Figure 34. *Vipiomorpha ypsilon* Tobias, 1962. ♀ **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** apex of antenna **l** apex of ovipositor, lateral view.

952196, 952276, 952298, 952374 (ZJUH); 1♀1♂, China, Liaoning Prov., Shenyang, Dongling, ?.V–VI.1994, Lou Juxian, No. 947490, 947491 (ZJUH); 6♀♀11♂♂, China, Liaoning Prov., Dalian, 5.IX.1992, Lou Juxian, No. 976211, 976217, 976209, 976014,

976157, 976093, 976154, 976258, 976208, 976248, 975977, 976109, 976232, 976171, 976225, 976200, 976085 (ZJUH); 1♂, China, Liaoning Prov., Shenyang, Dongling, 21.VI.1994, Lou Juxian, No. 947748 (ZJUH); 3♀♀5♂♂, China, Liaoning Prov., Fuxin, 16–23.VIII.1995, Lou Juxian, No. 961180, 961259, 961194, 961182, 961304, 961268, 961391, 961284 (ZJUH); 1♀5♂♂, China, Liaoning Prov., Fuxin, 25.VIII.1994, Lou Juxian, No. 951349, 951389, 951345, 951347, 951398, 951386 (ZJUH); 1♂, China, Jilin Prov., Changchun, 23.VII.1992, Lou Juxian, No. 951051 (ZJUH); 1♂, China, Jilin Prov., Liaoyuan, 21.VII.1991, Lou Juxian, No. 950411 (ZJUH); 1♂, China, Jilin Prov., Liaoyuan, 10.VIII.1990, Lou Juxian, No. 977137 (ZJUH).

Biology. Unknown.

Distribution. China (Jilin, Liaoning); Korea; Russia.

Note. This species is new to China.

***Vipiomorpha yunnanensis* sp. nov.**

<http://zoobank.org/BF499D14-CA6F-4F54-98EC-ED79AF97EB60>

Figures 35, 36

Material examined. Holotype: ♀, China, Yunnan Prov., Jingkan, 18.V.1983, Liao Yichang, No. 841267 (ZJUH).

Diagnosis. This new species is very similar to *Vipiomorpha ypsilon* Tobias, 1962 [China; Korea; Russia], but can be separated from the latter by the following characters: in dorsal view length of eye $2.3\times$ temple ($1.5\times$ in *V. ypsilon*); mesoscutum reddish yellow (black); hind wing vein 2-SC+R $1.2\times$ as long as vein 1r-m ($0.7\times$); median spots of T II touching lateral spots anteriorly (not touching lateral spots); T V largely rugose (largely smooth); scape blackish brown (yellowish brown, with a black brown streak dorsally); pterostigma yellowish brown (blackish brown).

Description. Holotype, ♀, length of body 6.6 mm, of fore wing 6.0 mm, of ovipositor sheath 8.0 mm.

Head. Antenna with 50 antennomeres; apical antennomere acute, $1.5\times$ longer than its maximum width (Fig. 36k); third antennomere 1.2 and $1.3\times$ longer than fourth and fifth, respectively, the latter $1.6\times$ longer than wide; median antennomeres ca. $1.1\times$ longer than their width; malar suture with dense short setae (Fig. 36i); clypeus height: inter-tentorial distance: tentorio-ocular distance = 4: 11: 7; clypeus smooth and shiny, with a single row of long setae; eye weakly emarginate (Fig. 36g); face largely smooth, with sparse and long setae (Fig. 36g); eye height: shortest distance between eyes: head width = 11: 14: 26; frons largely smooth except for a few weak punctures, strongly depressed behind antennal sockets, with a strong median groove (Fig. 36h); vertex smooth, but with some sparse short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 4: 3: 8; temples largely smooth except for a few weak punctures, and with some short setae, slightly narrowed immediately behind eyes (Fig. 36h).

Mesosoma. Length of mesosoma $1.5\times$ its height (Fig. 36c); anterior margin of pronotum with a single row of short setae; notauli deeply impressed, with a few weak cren-



Figure 35. *Vipiomorpha yunnanensis* sp. nov., ♀, holotype, habitus, lateral view.

ulae (Fig. 36d); mesoscutum smooth, with short and dense setae posteriorly (Fig. 36d); middle lobe of mesoscutum strongly convex medially; scutellar sulcus moderately wide and deep, with crenulae (Fig. 36d); scutellum with a few weak punctures, and with dense short setae posteriorly; metanotum strongly convex medially (Fig. 36d); propodeum largely smooth, with a complete and crenulate medio-longitudinal groove, with sparse setae medially, and with dense long setae laterally (Fig. 36d).

Wings. Fore wing (Fig. 36a): r very short; r: SR1: 3-SR: = 19: 19: 3; 1-SR+M straight, and 1.8× longer than 1-M; 2-SR: 3-SR: r-m = 8: 19: 9; first submarginal cell of forewing short; vein SR1 ends basally of mid-point between pterostigma and wing tip (at ca. 0.44); cu-a interstitial. Hind wing (Fig. 36b): r-m weakly curved; SC+R1: 2-SC+R: 1r-m = 9: 6: 5.

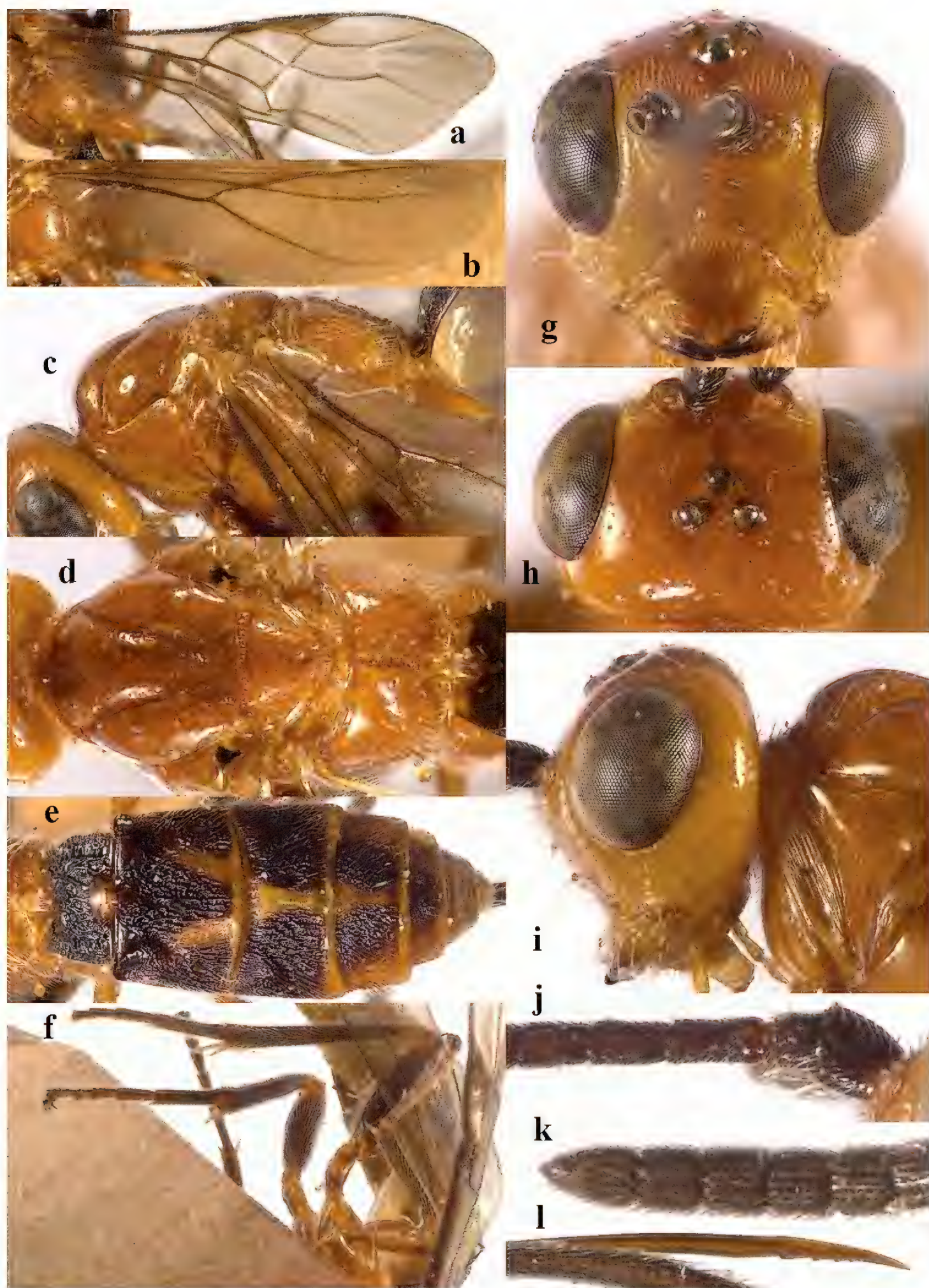


Figure 36. *Vipiomorpha yunnanensis* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** apex of antenna **l** apex of ovipositor, lateral view.

Legs. Length of fore femur: tibia: tarsus = 20: 23: 30; length of hind femur: tibia: basitarsus = 31: 34: 18; length of hind basitarsus $5.7\times$ its maximum width (Fig. 36f).

Metasoma. Length of T I $1.1\times$ its apical width, median area convex and strongly rugose (Fig. 36e); lateral grooves of T I strongly crenulate (Fig. 36e); median length of T II $0.7\times$ as long as its apical width; T II strongly rugose but antero-lateral areas smooth (Fig. 36e); T II without medio-basal area; antero-lateral areas of T II developed and smooth, anterior grooves wide, with a few weak crenulae (Fig. 36e); second suture deep and wide, with crenulae, slightly curved medially (Fig. 36e); median length of T III $0.37\times$ as long as its apical width; T III–IV with antero-lateral areas (of T IV weak), and crenulate transverse subposterior groove (Fig. 36e); T V with weak crenulate transverse subposterior groove; T III–VI rugose except posteriorly (T V and T VI weakly so); T VII largely smooth, and with some long setae posteriorly; hypopygium rather acute apically, far beyond level of apex of metasoma; ovipositor sheath $1.33\times$ as long as fore wing.

Colour. Largely yellow (Fig. 35); antenna, eye, mandible apically, claws, middle tibia and tarsus, hind femur, tibia and tarsus and ovipositor sheath black (Figs 35, 36g, f); T I black, T II–IV largely black (except posteriorly and T IV laterally), and with a yellow Y-shaped spot, T V black medio-anteriorly (Fig. 36e); wing membrane infusate, pterostigma and veins yellowish brown (Fig. 36a, b).

Biology. Unknown.

Distribution. China (Yunnan).

Etymology. Named after its type locality, the southwestern province of Yunnan.

Genus *Zaglyptogastra* Ashmead, 1900

Figures 37–40

Zaglyptogastra Ashmead, 1900: 137; Quicke 1981: 494, 1987: 136; El-Heneidy and Quicke 1991: 185. Type-species: *Zaglyptogastra abbotti* Ashmead, 1900 (Monobasic and original designation).

Eumorpha Szépligeti, 1908: 35. Type-species: *Eumorpha nigripennis* Szépligeti, 1908 (Monobasic). Synonymised by El-Heneidy and Quicke 1991: 185.

Holcobracon Cameron, 1909: 19 (not Cameron 1905). Type-species: *Holcobracon erythrasis* Cameron, 1909 (Monobasic). Synonymised by Quicke 1981: 493.

Calliidia Schulz, 1911: 68 (not Hubner 1806, Frieze 1899). Replacement name for *Eumorpha* Szépligeti, 1908.

Megagonia Szépligeti, 1906: 582. Type-species: *Megagonia seminigra* Szépligeti, 1906 (Designated by Viereck 1914: 90). Synonymised by Quicke 1981: 493.

Holconotus Fahringer, 1928: 19 (not Schmidt-Goebel 1846, Agassiz 1854 or Foerster 1863). Replacement name for *Holcobracon* Cameron, 1909.

Holcosomius Fahringer, 1935: 634. Replacement name for *Holconotus* Fahringer, 1928.

Diagnosis. Body medium-sized to large; terminal antennomeres sometimes acute apically; median antennomeres usually wider than long; in lateral view scapus without double

margin at inner side apically and concave apico-laterally, ventrally longer than dorsally; eye glabrous, large (smaller in male) and weakly emarginate; face often sculptured; clypeus moderately narrow, often flattened and without dorsal carina; malar suture moderately developed, often rugose; labio-maxillary complex normal, not elongate; frons depressed, with a weak to moderately developed median groove; mesosoma largely smooth and shiny; notauli weak, often only present anteriorly; scutellar sulcus narrow and usually crenulate; mesopleural suture smooth; precoxal suture absent; metanotum convex medially, and with a short median carina, somewhat protruding; propodeum often smooth, without medio-longitudinal carina or groove; angle between veins 1-SR and C+SC+R of fore wing more than 75°; marginal cell moderated long, vein SR1 reaching the wing margin at least 0.8× of distance between pterostigma and wing tip; second submarginal cell of fore wing usually more or less parallel-sided; fore wing vein r-m usually with both a distinct anterior and posterior bulla; fore wing vein 1-SR+M usually strongly bent after arising from 1-M, sometimes more or less evenly curved to straight; fore wing vein cu-a interstitial to distinctly postfurcal; fore wing vein 3-CU1 usually distinctly thickened posteriorly; hind wing vein 1r-m usually longer or at least as long as vein SC+R1, rarely shorter; apex of hind wing vein C+SC+R with more than one especially thickened bristle; claws simple; metasomal tergites usually largely strongly sculptured, rarely smooth; T I without medio-longitudinal carina, dorso-lateral carinae present or absent; T II usually with a weakly to strongly raised medio-basal triangular area which usually has similar sculpture as remainder of T; T II–IV often with strong antero-lateral areas and grooves; T III–V often with strongly crenulate transverse subposterior grooves, rarely absent; hypopygium rather acute apically; ovipositor usually as long as or longer than fore wing, with some (three or four) depressions and upper valve enlarged, subapically without dorsal nodus and ventral serrations (rarely distinct).

Biology. Quicke (1983) reported only one species, *Tryphocharia princeps* (Blackburn) (Coleoptera: Cerambycidae) as a host of *Z. cristata* (Szépligeti).

Distribution. Afrotropical; Australasian; Oriental; Palearctic.

Note. This genus is newly recorded from the Oriental region.

Key to Chinese species of the genus *Zaglyptogastra* Ashmead

- 1 Metasomal tergites yellowish brown (Fig. 38e); fore wing vein SR1 relatively short, 1.1× as long as vein 3-SR (Fig. 38a); triangular medio-basal area of T II rather large, nearly reaching posterior margin of tergite (Fig. 38e); pterostigma largely yellow, blackish brown apically (Fig. 38a); hind leg largely yellow, only tarsus blackish brown apically (Fig. 38f); stemmaticum yellow (Fig. 38h); ovipositor sheath with yellowish setae (Fig. 37) [China]..... ***Z. exilis* sp. nov.**
- T I–II yellow, T III yellowish brown, T IV–VII black (Fig. 40e); fore wing vein SR1 relatively long, 1.6× as long as vein 3-SR (Fig. 40a); T II without triangular medio-basal area (Fig. 40e); apical 2/5 of pterostigma blackish brown, and basal 3/5 yellow (Fig. 40a); hind tibia apically and tarsus blackish brown (Fig. 40f); stemmaticum blackish brown (Fig. 40h); ovipositor sheath with blackish setae (Fig. 39) [China]..... ***Z. tricolor* sp. nov.**

***Zaglyptogastra exilis* sp. nov.**

<http://zoobank.org/824F1AF8-6127-4BCE-A387-894E9C488B46>

Figures 37, 38

Material examined. *Holotype*: ♀, China, Hainan Prov., Jianfengling, 1.IV.1984, Gu Maobin, No. IOZ(E)1964587 (IZCAS).

Diagnosis. This new species is very similar to *Zaglyptogastra abbotti* Ashmead, 1900 [Indonesia; Malaysia; Thailand], but can be separated from the latter by the following characters: scape blackish brown (brown or yellowish brown dorsally in *Z. abbotti*); wing membrane yellow, greyish brown apically, stigmal spot rather large, enclosing entire vein CU1b (greyish brown area of membrane narrower, and stigmal spot small); T V with striae medio-basally (smooth, only with few punctures, without striae).

Description. Holotype, ♀, length of body 18.6 mm, of fore wing 17.2 mm, of ovipositor sheath 17.0 mm.

Head. Antenna incomplete, with 63 antennomeres remaining; third antennomere 1.4 and 1.6× longer than fourth and fifth, respectively, the latter 0.8× longer than wide; malar suture with dense short setae (Fig. 38i); inter-tentorial distance: tentorio-ocular distance = 7: 5; clypeus largely smooth; eye rather emarginated (Fig. 38g); face coarsely rugose, with some long setae (Fig. 38g); shortest distance between eyes: head width = 24: 42; frons smooth, moderately depressed behind antennal sockets, with a median groove (Fig. 38h); vertex smooth, but with some short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between



Figure 37. *Zaglyptogastra exilis* sp. nov., ♀, holotype, habitus, lateral view.



Figure 38. *Zaglyptogastra exilis* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** apex of ovipositor, lateral view.

posterior ocellus and eye = 5: 7: 12; temples largely smooth except for a few weak punctures, and with dense long setae laterally, subparallel immediately behind eyes (Fig. 38h).

Mesosoma. Length of mesosoma 2.0× its height (Fig. 38c); notauli impressed in anterior half of mesoscutum (Fig. 38d); scutellar sulcus moderately wide and deep, with crenulae (Fig. 38d); scutellum with some short setae posteriorly; propodeum smooth, with sparse setae medially, and with dense long setae laterally (Fig. 38d).

Wings. Fore wing (Fig. 38a): pterostigma $3.5\times$ longer than wide; SR1: 3-SR: r = 39: 35: 7; 1-SR+M slightly curved subbasally, and $1.4\times$ longer than 1-M; 2-SR: 3-SR: r-m = 14: 35: 15; 3-CU1 distinctly thickened posteriorly; cu-a slightly postfurcal. Hind wing (Fig. 38b): 1r-m $1.2\times$ longer than SC+R1; apex of C+SC+R with nine thickened basal bristles; base with a medium-sized glabrous area distal to vein cu-a.

Legs. Length of fore femur: tibia: tarsus = 34: 39: 49; length of fore basitarsus $4.7\times$ its maximally width; length of hind femur: tibia: basitarsus = 37: 64: 23 (Fig. 38f); length of hind basitarsus $6.3\times$ its maximum width.

Metasoma. Length of T I $1.3\times$ its apical width, median area convex and longitudinally rugose (Fig. 38e); lateral grooves of T I strongly crenulate (Fig. 38e); apical width of T II $1.8\times$ as long as its median length; T II strongly rugose but antero-lateral areas smooth (Fig. 38e); T II with large medio-basal area which ends near posterior margin of T II; antero-lateral areas of T II developed and smooth, anterior grooves wide, with a few crenulae (Fig. 38e); second suture deep and wide, with crenulae, more or less straight medially (Fig. 38e); T III–V with strong antero-lateral areas and grooves, and with strong crenulate transverse subposterior grooves; T III and T IV strongly rugose but antero-lateral areas smooth (Fig. 38e); T V weakly rugose antero-medially, smooth laterally and posteriorly; T VI and T VII largely smooth; ovipositor sheath as long as fore wing.

Colour. Head and mesosoma largely yellow (Fig. 37); antenna, eye and mandible apically black (Fig. 38g); legs largely yellow, tarsi apically and claws black (Fig. 38f); ovipositor sheath black, with yellow setae (Fig. 37); T I–IV blackish brown (T II yellowish brown medio-basally), T V–VII yellowish brown (Fig. 38e); wing membrane $2/3$ basally yellow and $1/3$ apically brownish (in hind wing up to posterior margin); stigmal spot yellowish brown and reaching vein 2-1A; pterostigma yellow except for extreme apex; veins largely yellow, fore wing veins 1-SR, 3-CU1, apical half of 3-SR and 2-M, SR1, 3-M, hind wing veins SR apically, 2-M medially and apically yellowish brown (Fig. 38a, b).

Biology. Unknown.

Distribution. China (Hainan).

Etymology. Named after the rather slender body: *exilis* is Latin for slender.

Zaglyptogastra tricolor sp. nov.

<http://zoobank.org/9C6F7ED7-BA6E-4525-B66D-0F4BE8DC451F>

Figures 39, 40

Material examined. Holotype: ♀, China, Yunnan Prov., near Jingdong, 1300 m, 17.III.1957, Bangfeiluofu, No. IOZ(E)1964532 (IZCAS).

Diagnosis. This new species is very similar to *Zaglyptogastra plumiseta* (Enderlein, 1920) [Indonesia; Malaysia; Singapore], but can be separated from the latter by the following characters: fore wing vein SR1 relatively long, $1.6\times$ as long as vein 3-SR (at most $1.1\times$ in *Z. plumiseta*); hind leg yellow, tibia apically and tarsus black brown (entirely black); T I–II yellow, T III yellowish brown, T IV–VII black (uniformly black).

Description. Holotype, ♀, length of body 13.2 mm, of fore wing 11.3 mm, of ovipositor sheath 12.8 mm.



Figure 39. *Zaglyptogastra tricolor* sp. nov., ♀, holotype, habitus, lateral view.

Head. Antenna incomplete, 55 antennomeres remaining; third antennomere 1.3 and 1.4× longer than fourth and fifth, respectively, the latter as long as wide; malar suture with dense short setae (Fig. 40i); inter-tentorial distance: tentorio-ocular distance = 12: 7; clypeus largely smooth; eye rather emarginate (Fig. 40g); face coarsely sculptured, with some sparse and long setae (Fig. 40g); shortest distance between eyes: head width = 18: 37; frons smooth, moderately depressed behind antennal sockets, with a median groove (Fig. 40h); vertex smooth, but with some sparse short setae; minimum distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: minimum distance between posterior ocellus and eye = 5: 7: 12; temples largely smooth except for a few weak punctures, and with dense long setae laterally, weakly narrowed immediately behind eyes (Fig. 40h).

Mesosoma. Length of mesosoma 1.9× its height (Fig. 40c); notauli impressed in anterior half of mesoscutum (Fig. 40d); scutellar sulcus moderately wide and deep,



Figure 40. *Zaglyptogastra tricolor* sp. nov., ♀, holotype **a** fore wing **b** hind wing **c** mesosoma, lateral view **d** mesosoma, dorsal view **e** metasoma, dorsal view **f** hind leg, lateral view **g** head, anterior view **h** head, dorsal view **i** head, lateral view **j** scapus outer side, lateral view **k** apex of ovipositor, lateral view.

with crenulae (Fig. 40d); scutellum with some short setae posteriorly; propodeum smooth, with sparse setae medially, and with dense long setae laterally (Fig. 40d).

Wings. Fore wing (Fig. 40a): pterostigma 3.5× longer than wide; SR1: 3-SR: r = 39: 24: 5; 1-SR+M more or less straight, and 1.5× longer than 1-M; 2-SR: 3-SR:

r-m = 13: 24: 11; 3-CU1 distinctly thickened posteriorly; cu-a interstitial. Hind wing (Fig. 40b): 1r-m 1.2× longer than SC+R1; apex of C+SC+R with six thickened basal bristles; base with a small glabrous area distal to vein cu-a.

Legs. Length of fore femur: tibia: tarsus = 42: 49: 64; length of fore basitarsus 5.6× its maximally width; length of hind femur: tibia: basitarsus = 40: 64: 23 (Fig. 40f); length of hind basitarsus 6.6× its maximum width.

Metasoma. Length of T I 1.4× its apical width, median area convex and longitudinally rugose (Fig. 40e); lateral grooves of T I strongly crenulate (Fig. 40e); apical width of T II 1.4× as long as its median length; T II strongly longitudinally rugose but antero-lateral areas smooth (Fig. 40e); T II with large but weakly raised medio-basal area nearly reaching antero-lateral areas; antero-lateral areas of T II narrow and smooth, anterior grooves narrow, with a few sparse crenulae (Fig. 40e); second suture deep and wide, with crenulae, straight medially (Fig. 40e); T III–V with strong antero-lateral areas and grooves, and with strong crenulate transverse subposterior grooves; T III and T IV strongly longitudinally rugose but antero-lateral areas smooth (Fig. 40e); T V weakly rugose antero-medially, smooth laterally and posteriorly; T VI and T VII largely smooth; ovipositor sheath 1.1× longer than fore wing.

Colour. Head and mesosoma largely yellow (Fig. 39); antenna, eye, surroundings of stemmaticum, stemmaticum and mandible apically black (Fig. 40g, h); legs largely yellow, fore and middle tarsi apically, hind tibia apically, hind tarsus, and claws black (Fig. 40f); ovipositor sheath black, with blackish brown setae (Fig. 39); T I and T II yellow, T III yellowish brown, T IV–VII black (but posterior margins of T VI and T VII yellow; Fig. 40e); basal half of wing membrane yellow and apical half blackish brown; stigmal spot blackish brown and reaching vein 2-1A, surroundings of vein 2-SR+M and besides vein r-m subhyaline; basal 3/5 of pterostigma yellow (narrowly brown basally) and apically 2/5 blackish brown; fore wing veins M+CU1, 1-1A, cu-a, 1-M apically, 2-CU1 basally and 2-1A basally yellow, remaining fore wing veins blackish brown, hind wing veins SC+R1 anteriorly, SR (except for external basally blackish brown), 2-M medially and apically blackish brown, remaining hind wing veins yellow (Fig. 40a, b).

Biology. Unknown.

Distribution. China (Yunnan).

Etymology. Named after the tri-coloured metasoma: *tricolor* is Latin for “with three colours”.

Acknowledgements

The authors thank Mrs Hong Liu (IZCAS) and Mrs Li Dai (SHEM) for the loan of specimens. This research was supported by the General Program of National Natural Science Foundation of China (31702035), the Key International Joint Research Program of National Natural Science Foundation of China (31920103005), and the National Key Research and Development Plan (2017YFD0200101, 2019YFD0300104).

References

- Ashmead WH (1900) Classification of the Ichneumon flies, or the superfamily Ichneumonoidea. *Proceedings of the United States National Museum* 23(1206): 1–220. <https://doi.org/10.5479/si.00963801.23-1206.1>
- Baltazar CR (1962) The genera of parasitic Hymenoptera in the Philippines, Part 1. *Pacific Insects* 4(4): 737–771.
- Baltazar CR (1963) A new genus and nine new species of Philippines Braconidae (Hymenoptera), Part 1. *Pacific Insects* 5(3): 577–589.
- Baltazar CR (1972) Reclassification of some Indo-Australian and African Braconinae and Rogadinae (Braconidae, Hymenoptera). *Philippine Journal of Science* 98(1969): 259–277.
- Butcher BA, Quicke DLJ (2010) Revision of the Indo-Australian braconine wasp genus *Ischnobracon* Baltazar (Hymenoptera: Braconidae) with description of six new species from Thailand, Laos and Sri Lanka. *Journal of Natural History* 44(35–36): 2187–2212. <https://doi.org/10.1080/00222933.2010.488811>
- Cameron P (1899) Hymenoptera Orientalia, or contributions to a knowledge of the Hymenoptera of the Oriental Zoological Region. Part VIII. The Hymenoptera of the Khasia Hills. First paper. *Memoirs and Proceedings of the Manchester Literary and Philosophical Society* 43(3): 1–220.
- Cameron P (1903) Descriptions of new genera and species of Hymenoptera taken by Mr. Robert Shelford at Sarawak, Borneo. *Journal of the Straits Branch of the Royal Asiatic Society* 39: 89–181.
- Cameron P (1909) On some African species of Braconinae in the Royal Berlin Zoological Museum. *Archiv for Mathematik og Naturvidenskab* 30: 1–27.
- Campadelli G, Scaramozzino EPL (1994) Parasitic Hymenoptera of xylophagous insects in Romagna. *Bollettino dell'Istituto di Entomologia della Universita degli Studi di Bologna* 48: 115–121.
- Cordo HA, DeLoach CJ, Ferrer R, Briano J (1995) Bionomics of *Carmenta haematica* (Ureta) (Lepidoptera: Sesiidae) which attacks snakeweeds (*Gutierrezia* spp.) in Argentina. *Biological Control* 5(1): 11–24. <https://doi.org/10.1006/bcon.1995.1002>
- De Santis L, Esquivel L (1966) Tercera lista de Himenopteros parasitos y predadores de los insectos de la Republica Argentina. *Revista del Museo de La Plata. Sec. Zoologia (N.S.) (Zool.)* 9(69): 47–215.
- Dover C (1925) Synonymie und neue Fundorte der Braconiden Indiens. *Entomologische Mitteilungen* 14(1): 39–40.
- El-Heneidy AH, Quicke DLJ (1991) The Indo-Australian species of the braconine wasp genus *Zaglyptogastra* Ashmead. *Journal of Natural History* 25: 183–201. <https://doi.org/10.1080/00222939100770111>
- Enderlein G (1905) Neue Braconiden aus dem indischen und afrikanischen Gebiet. *Stettiner Entomologische Zeitung* 66: 227–236.
- Fahringer J (1925–1928) *Opuscula Braconologica*, Palaearktische Region, Lief. 1. Verlag F. Wagner, Wien, 606 pp.
- Fahringer J (1928) *Opuscula Braconologica*. Band 1. Palaearktischen Region. Lieferung 7–9. *Opuscula braconologica*. Fritz Wagner, Wien, 433–606.

- Fahringer J (1929) Beiträge zur Kenntnis der Braconiden fauna China. Entomologisk Tidskrift 50: 82–88.
- Fahringer J (1934) Opuscula braconologica, Palaearktische Region, Lieferung 3(5–8): 511–548.
- Fahringer J (1935) Opuscula Braconologica. Band 2. Äthiopische Region. Lieferung 6–8. Opuscula braconologica. Fritz Wagner, Wien, 385–635.
- Fulmek L (1968) Parasitinsekten der Insektengallen Europas. Beiträge zur Entomologie 18(7/8): 719–952.
- Grobler JH (1957) Some Aspects of the Biology, Ecology and Control of the Pine Brown Tail Moth, *Euproctis terminalis*, Walk. Department of Agriculture South Africa, Pretoria, 180 pp.
- Györfi J (1941) Die Insektenfeinde der Borkenkäfer Ungarns (in Hungarian with German summary). Erdészeti Kiserletek, Sopron 43: 32–65.
- Haliday AH (1835) Essay on parasitic Hymenoptera. Entomological Magazine 3(1): 20–45.
- Ivanov P (1896) Braconids cyclostomes des environs de Koupiansk avec tableaux synoptiques des genres et des espèces de ces insectes. (in Ukrainian). Trudy Obshchestva Ispytatelei Prirody pri Imperatorskom Khar'kovskom Universitete 29: 151–222.
- Marsh PM (1979) Braconidae. Aphidiidae. Hybrizontidae. In: Krombein KV, Hurd Jr PD, Smith DR, Burks BD (Eds) Catalog of Hymenoptera in America north of Mexico. Smithsonian Institution Press, Washington, 144–313. <https://doi.org/10.5962/bhl.title.5074>
- Muesebeck CFW, Walkley LM (1951) Family Braconidae. In: Muesebeck CFW, Krombein KV, Townes HK (Eds) Hymenoptera of America North of Mexico – Synoptic catalog. U.S. Dept. Agriculture Monograph, No. 2: 90–184.
- Myers JG (1932) Biological observations on some Neotropical parasitic Hymenoptera. Transactions of the Entomological Society of London 80: 121–136. <https://doi.org/10.1111/j.1365-2311.1932.tb00086.x>
- Papp J (1967) Braconidae aus der Mongolischen Volksrepublik. Ergebnisse der Mongolisch-Deutschen Biologischen Expeditionen seit 1962, Nr. 28. Mitteilungen aus dem Zoologischen Museum in Berlin 43: 237–245. <https://doi.org/10.1002/mmzn.19670430208>
- Papp J (1971) *Bracomorpha torkai* gen. et sp. n. und Mitteilungen über einige *Bracon* Fabr.-Arten von Ratzeburg, Schmiedeknecht und Fahringer (Hymenoptera, Braconidae). Reichenbachia 13: 275–292.
- Papp J (1996) Braconidae (Hymenoptera) from Korea, XVIII. Annales Historico-Naturales Musei Nationalis Hungarici 88: 145–170.
- Papp J (1998) New braconid wasps (Hymenoptera: Braconidae) in the Hungarian Natural History Museum, 6. Annales Historico-Naturales Musei Nationalis Hungarici 90: 221–256.
- Papp J (2009) Contribution to the braconid fauna of the former Yugoslavia, V. Ten subfamilies (Hymenoptera, Braconidae). Entomofauna 30(1): 1–35.
- Quicke DLJ (1981) A reclassification of some Oriental and Ethiopian species of Braconinae (Hymenoptera: Braconidae). Oriental Insects 14(4): 493–498. <https://doi.org/10.1080/0305316.1980.10434834>
- Quicke DLJ (1983) Some new host records for genera and species of Braconinae (Hymenoptera: Braconidae) including economically important species. Entomologist's Monthly Magazine 119: 91–93.
- Quicke DLJ (1984a) Three new genera of Indo-Australian Braconinae (Hym., Braconidae). Entomologist's Monthly Magazine 120: 73–79.

- Quicke DLJ (1984b) Two new genera of Braconinae from the Afrotropical region with a partial review of those genera with ‘merinotoid’ metasomas (Hymenoptera. Braconidae). Entomologist’s Monthly Magazine 120: 37–45.
- Quicke DLJ (1985) Redescription of *Craspedolcus* with notes on included species and related genera (Hymenoptera: Braconidae). Oriental Insects 18(1984): 354–360. <https://doi.org/10.1080/00305316.1984.10432211>
- Quicke DLJ (1987) The old world genera of braconine wasps (Hymenoptera: Braconidae). Journal of Natural History 21: 43–157. <https://doi.org/10.1080/00222938700770031>
- Quicke DLJ (1991) A revision of the Australian species of *Iphiaulax* Foerster and *Chaoilta* Cameron (Insecta: Hymenoptera: Braconidae). Records of the Australian Museum 43(1): 63–84. <https://doi.org/10.3853/j.0067-1975.43.1991.41>
- Ramakrishna Ayyar TV (1924) A catalogue of the braconid wasps described from the Indian region. Proceedings of the Fifth Entomological Meeting held at Pusa 1923. 5(1923): 352–362.
- Ramakrishna Ayyar TV (1928) A contribution to our knowledge of south Indian Braconidae. Part I. Vipioninae. Memoirs of the Department of Agriculture in India (Entomological Series) 10(3): 29–60.
- Roman A (1913) Philippinische Schlupfwespen aus dem schwedischen Reichsmuseum 1. Arkiv for Zoologi 8(15): 1–51. <https://doi.org/10.5962/bhl.part.1064>
- Schulz WA (1911) Zweihundert alte Hymenopteren. Zoologische Annalen. Wuerzburg 4: 1–220.
- Shenefelt RD (1978) Braconidae 10. Braconinae, Gnathobraconinae, Mesostoinae, Pseudodicrogeniinae, Telengainae, Ypsistocerinae plus Braconidae in general, major groups, unplaced genera and species. In: van Achterberg C, Shenefelt RD (Eds) Hymenopterorum Catalogus (nov. editio), Pars 15. Dr. W. Junk B. V., Hague, 1425–1872.
- Szépligeti G (1900) Braconiden aus New-Guinea in der Sammlung des Ungarischen National Museums. Termesztudományi Füzetek 23: 49–65.
- Szépligeti G (1902) Tropischen Cenocoeliden und Braconiden aus der Sammlung des Ungarischen National-Museums. Termesztudományi Füzetek 25: 39–84.
- Szépligeti G (1904) Hymenoptera. Fam. Braconidae. Genera Insectorum 22: 1–253.
- Szépligeti G (1906) Braconiden aus der Sammlung des ungarischen National-Museums, 1. Annales Historico-Naturales Musei Nationalis Hungarici 4: 547–618.
- Szépligeti G (1908) Hymenoptera: Braconidae & Ichneumonidae. In: Sjöstedts Y (Ed.) Wissenschaftliche Ergebnisse der Schwedischen Zoologischen Expedition nach dem Kilimandjaro, dem Meru und den umgebenden Massaisteppe. Almqvist & Wiksells, Uppsala, 25–96.
- Telenga NA (1936) Insects Hymenoptera 5 (2). Braconidae, Pt. 1. In: Sernov SA, Stackelberg AA (Eds) Faune de l’URSS. l’Academie des Sciences de l’URSS, Leningrad, 402 pp. [in Russian; German text: 306–402]
- Thomson CG (1892) XLVII. Bidrag till Braconidernas Kannedom. I. Cyclostomi. Opuscula Entomologica XVII: 1777–1861.
- Tobias VI (1962) New genera of parasitic Braconids (Hymenoptera, Braconidae) in the fauna USSR. Zoologicheskii Zhurnal 41(8): 1190–1197.
- Tobias VI (1971) Review of the Braconidae (Hymenoptera) of the U.S.S.R. Trudy Vsesoyuznogo Entomologicheskogo Obshchestva 54: 156–268. [Translation (1975). Amerind Publishing Co. Pvt. Ltd., New Delhi, 164 pp.]

- Tobias VI (1976) Braconids of the Caucasus (Hymenoptera, Braconidae). Opređ. Faune SSSR 110. Nauka Press, Leningrad, 286 pp.
- Tobias VI (1986) Braconinae. In: Medvedev GS (Ed.) Order Hymenoptera. Family Braconidae Opređelitel Nasekomykh Evropeiskoi Chasti SSSR, Tom III, Pereponchatokrylye, Chetvertaia Chasf. Nauka Publishers Leningrad Division, Leningrad, 94–149.
- Tobias VI, Abdinbekova AA (1973) Ichneumon flies of the genus *Ipobracon* Thomson, 1892 (Hymenoptera, Braconidae) from the fauna USSR and Mongolia. Entomologicheskoye Obozreniye 52(2): 430–438. [Entomological Review 52(2): 296–302.]
- Tobias VI, Belokobylskij SA (2000) Braconinae. In: Ler PA (Ed.) [Key to the insects of Russian Far East (Vol. IV). Neuropteroidea, Mecoptera, Hymenoptera. Pt 4.] Opređelitel nasekomykh Dalnego Vostoka Rossii. T. IV. Setchatokryloobraznye, skorpionnitsy, pereponchatokrylye. Ch. 4. Dal'nauka, Vladivostok, 109–192.
- Uhthoff-Kaufmann RR (1990) The occurrence of the subfamily Aseminae (Col.: Cerambycidae) in the British Isles. Entomologist's Record 102: 55–63.
- van Achterberg C (1988) Revision of the subfamily Blacinae Foerster (Hymenoptera, Braconidae). Zoologische Verhandelingen Leiden 249: 1–324.
- van Achterberg C (1990) Illustrated key to the subfamilies of the Holarctic Braconidae (Hymenoptera: Ichneumonoidea). Zoologische Mededelingen Leiden 64: 1–20.
- van Achterberg C (1993) Illustrated key to the subfamilies of the Braconidae (Hymenoptera: Ichneumonoidea). Zoologische Verhandelingen Leiden 283: 1–189.
- van Achterberg C (1997) Revision of the Haliday collection of Braconidae (Hymenoptera). Zoologische Verhandelingen Leiden 314: 1–115.
- van Achterberg C, O'Toole C (1993) Annotated catalogue of the types of Braconidae (Hymenoptera) in the Oxford University Museum. Zoologische Verhandelingen Leiden 287: 1–48.
- Viereck HL (1911) Descriptions of one new genus and eight new species of Ichneumon flies. Proceedings of the United States National Museum 40(1832): 475–480. <https://doi.org/10.5479/si.00963801.1832.475>
- Viereck HL (1912) Contributions to our knowledge of bees and Ichneumon-flies, including descriptions of twenty-one new genera and fifty-seven new species of Ichneumon-flies. Proceedings of the United States National Museum 42(1910): 613–648. <https://doi.org/10.5479/si.00963801.42-1920.613>
- Viereck HL (1913) Descriptions of ten new genera and twenty-three new species of Ichneumon-flies. Proceedings of the United States National Museum 44: 555–568. <https://doi.org/10.5479/si.00963801.1968.555>
- Viereck HL (1914) Type Species of the Genera of Ichneumon Flies. United States National Museum Bulletin No. 83, 186 pp. <https://doi.org/10.5479/si.03629236.83.1>
- Wang Y-P, Chen X-X, Wu H, He J-H (2009) A new parasitoid (Hymenoptera: Braconidae) of *Monochamus alternatus* (Coleoptera: Cerambycidae) in China. Biologia 64(5): 942–946. <https://doi.org/10.2478/s11756-009-0166-8>
- Watanabe C (1937) A contribution to the knowledge of the Braconid fauna of the Empire of Japan. Journal of the Faculty of Agriculture, Hokkaido (Imp.) University 42: 1–188.
- Webb JL (1909) The southern pine sawyer (*Monohammus titillator* Fab.). United States Department of Agriculture. Bulletin of the Bureau of Entomology 58(4): 41–56.

- Westwood JO (1882) Descriptions of new or imperfectly known species of Ichneumonines Adsciti. *Tijdschrift voor Entomologie* 25: 17–48.
- Yu DS, van Achterberg C, Horstmann K (2016) Taxapad 2016, Ichneumonoidea 2015. Database on flash-drive, Nepean, Ontario, Canada. www.taxapad.com